HAZARD COMMUNICATION STANDARD UPDATES 2013

East Carolina University
Globally Harmonized System (GHS)

- An international approach to hazard communication that provides agreed upon criteria for:
  - Classification of chemical hazards.
  - Standardized approach Safety Data Sheets.
  - New labeling requirements for chemical containers.

- GHS was a multi-year process, which involved many different countries, international organizations and stakeholder groups.
1. GHS will improve the safety and health of workers with more effective communications on hazards of chemicals.

2. GHS will standardize all chemical hazard information around the world. And ensure all pertinent information is included on the labels and in safety data sheets.

3. Enables workers, health professionals, and emergency responders to access more efficient and effective data.
Major Changes to the Hazard Communication Standard

- **Hazard Classification**
  - Definitions are more specific for health and physical hazard criteria
  - These specifics will enable more consistent classifications for manufacturers
  - Ensures Safety Data Sheets and Labels are more accurate

- **Labels**
  - Must include a signal word, pictogram, and hazard statement for each hazard class and category.
  - Precautionary statements must be provided as well.

- **Safety Data Sheets (SDS’s)**
  - Name change from Material Safety Data Sheets to Safety Data Sheets.
  - Now have a standardized 16 section format.
**Types of Chemical Hazard Classifications**

**Health Hazards**
- Acute Toxicity
- Carcinogenicity
- Reproductive Toxicity
- Skin Corrosion/Irritation
- Respiratory or Skin Sensitization
- Aspiration Toxicity
- Target Organ Systemic Toxicity

**Physical Hazards**
- Explosive
- Flammable
- Gases Under Pressure
- Pyrophoric
- Self-Reactive
- Water Reactive
- Oxidizer
- Organic Peroxide
- Corrosive to Metals

**Hazard Categories**
- Range from 1-5, with Category 1 being a higher hazard than Category 5.
- HCS chose not to adopt Category 5 on a few of the hazard classes.
Requirement for Manufacturer Labels

- Product Identifier
- Supplier Identification
- Signal Word
- Precautionary Statement(s)
- Hazard Statement
- Pictogram(s)
NEW LABELS FROM MANUFACTURER

- **Product Identifier**
  - Chemical Name, CAS Number

- **Supplier Identification**
  - Name, Address, Phone Number, Emergency Contact, Other pertinent information
Signal Word

- Used to indicate the relative severity of the hazard
- Alert reader to a potential hazard on the label

“Danger”: more severe hazards
“Warning”: less severe hazards
Hazard Statement

- Describes the nature of the hazard(s) of the substance. All applicable statements must appear on the label.

- **Examples:**
  - Highly Flammable
  - Unstable Explosive
  - Toxic if Inhaled
Precautionary Statement(s)

- Describes recommended measures to prevent and minimize adverse effects from exposure or improper handling and storage.
- Addresses the following areas:
  - Prevention
  - Response
  - Storage
  - Disposal

- **Examples:**
  - Keep container tightly closed.
  - Keep away from heat/sparks/open flame.
Pictogram

- Each pictogram consists of:
  - A symbol on a white background framed within a red border and represents a distinct hazard.
- The pictogram on the label is determined by the chemical hazard classification.
  - Labels can have more than one pictogram.
- Nine total pictograms. Eight mandatory pictograms are designated.
  - Hazardous to Aquatic Environment is not mandatory
## HCS Pictograms

<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</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Organic Peroxides</td>
<td>Irritant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hazardous to Ozone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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</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>
Carcinogenicity - Substances and mixtures which have induced benign and malignant tumors in well-performed experimental studies on animals are considered also to be presumed or suspected human carcinogens.

Mutagenicity - agents giving rise to an increased occurrence of mutations in populations of cells and/or organisms.

Reproductive toxicity - adverse effects on sexual function and fertility in adult males and females, as well as adverse effects on development of the offspring.

Target organ system toxicity - specific, non-lethal target organ toxicity arising from a single or repeated exposure to a chemical.

Respiratory sensitization - chemical that will lead to hypersensitivity of the airways following inhalation of the chemical.

Aspiration hazard - entry of a liquid or solid chemical directly through the oral or nasal cavity, or indirectly from vomiting, into the trachea and lower respiratory system.
- **Eye irritation** - production of changes in the eye following the application of test substance to the anterior surface of the eye, which are full reversible within 21 days of application.
- **Skin Irritation** - production of reversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis, which was followed by the application of a test substance for up to 4 hours.
- **Respiratory Irritation** - production of reversible damage to the respiratory tract.
- **Skin sensitizer** - chemical that induces an allergic response following skin contact.
- **Hazardous to Environment** - can be acute or chronic with immediate damage or long term over an organisms life cycle.
- **Narcotic Effects** - results from non-lethal target organ toxicity arising from a single exposure to a chemical.
- **Acute Toxicity** - adverse effects occurring following administration of a single dose of a substance, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.
- **Flammable gases** - having a flammable range with air at 20°C (68 F) and a standard pressure of 101.3 kPa (14.7 psi).
- **Flammable aerosols** - any non-refillable receptacle containing a flammable contents as gas compressed, liquefied or dissolved under pressure, and fitted with a release device allowing the contents to be ejected as particles.
- **Flammable liquids** - Any liquid with a flash point of 93 degrees C (199.4 F) or less.
- **Flammable solids** - a solid, usually in a powder or granular form, that is easily combustible through friction.
- **Pyrophoric solid/liquids** - means a solid/liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.
- **Self-heating substances and mixtures** - Solids or liquids, other than pyrophoric, which by reaction with air and without energy supply is liable to self heat.
- **Substances and mixtures which, in contact with water, emit flammable gases** - solid or liquid chemicals which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.
- **Organic peroxides** - Organic liquids or solids that can decompose explosively, burn rapidly, be sensitive to friction and react dangerously with other chemicals.
- **Self-reactive substances and mixtures** - thermally unstable liquid or solid chemicals liable to undergo a strongly exothermic decomposition even without participation of oxygen (air).
Explosives - Solid or liquid substances capable of producing gas at such a high temperature and pressure that it can cause damage to surroundings.

Self-reactive substances and mixtures - thermally unstable liquid or solid chemicals liable to undergo a strongly exothermic decomposition even without participation of oxygen (air).

Organic peroxides - Organic liquids or solids that can decompose explosively, burn rapidly, be sensitive to friction and react dangerously with other chemicals.

Acute Aquatic Toxicity - means the intrinsic property of a material to cause injury to an aquatic organism in a short-term exposure.

Chronic Aquatic Toxicity - means the potential or actual properties of a material to cause adverse effects to aquatic organisms during exposures that are determined in relation to the lifecycle of the organism.
- **Gases under pressure** - pressure of 200 kPa (29 psi) or more, which are liquefied or liquefied and refrigerated.
- Includes 4 groups: compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases.

- **Oxidizing gases** - any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.
- **Oxidizing solid/liquids** - Though not necessarily combustible on their own, generally by yielding oxygen cause or contribute combustion of other material.
Corrosive to metals - means a chemical which by chemical action will materially damage, or even destroy, metals.

Serious eye damage - production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the anterior surface of the eye, which is not fully reversible within 21 days of application.

Skin corrosion - production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis, which was followed by the application of a test substance for up to 4 hours.
GHS LABELING SAMPLE

SAMPLE LABEL

Product Identifier

Hazard Pictograms

Signal Word

Danger

Supplier Identification

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

Precautionary Statements

Supplemental Information

Directions for Use

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.

Fill weight: Lot Number:
Gross weight: Fill Date:
Expiration Date:
The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of chemical products.

The updated SDS will have an uniform format, requiring 16 specific section headings to be used in a specified sequence.

Must be readily accessible (24/7) to all personnel, when they are in their work areas, during each work shift.

Hazard communication only works when employers and personnel work together to use SDS information to ensure proper protective measures are being implemented.
Section 1, Identification: Includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) Identification: Includes all hazards regarding the chemical; required label elements.

Section 3, Composition/Information on Ingredients: Includes information on chemical ingredients; trade secret claims.

Section 4, First-aid Measures: Includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting Measures: Lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental Release Measures: Lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and Storage: Lists precautions for safe handling and storage, including incompatibilities.
Section 8, Exposure Controls/Personal Protection: Lists OSHA’s Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and Chemical Properties: Lists the chemical’s characteristics.

Section 10, Stability and Reactivity: Lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological Information: Includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

Section 16, Other Information: Includes the date of preparation or last revision.
Example of New Format SDS

NFPA 704 Placard & Ratings Voluntarily Provided

GHS System and Labels Down in Section 2

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

<table>
<thead>
<tr>
<th>Product name</th>
<th>:</th>
<th>Product XYZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>:</td>
<td></td>
</tr>
<tr>
<td>SDS Number</td>
<td>:</td>
<td>888100008809</td>
</tr>
<tr>
<td>Version</td>
<td>:</td>
<td>1.1</td>
</tr>
<tr>
<td>Product Use Description</td>
<td>:</td>
<td>Fuel</td>
</tr>
<tr>
<td>Company</td>
<td>:</td>
<td></td>
</tr>
<tr>
<td>Chemtrec (Emergency Contact)</td>
<td>:</td>
<td>(800) 424-9300</td>
</tr>
</tbody>
</table>

**SECTION 2. HAZARDS IDENTIFICATION**

**Classifications**
- Flammable Liquid – Category 1 or 2 depending on formulation.
- Aspiration Hazard – Category 1
- Carcinogenicity – Category 2
- Specific Target Organ Toxicity (Repeated Exposure) – Category 2
- Specific Target Organ Toxicity (Single Exposure) – Category 3
- Skin Irritation – Category 2
- Eye Irritation – Category 2B
- Chronic Aquatic Toxicity – Category 2

**Pictograms**

- Flammable
- Health
- Reactivity
- Specific Hazard

**Signal Word**
- Danger
Please log in with the provided User ID and Password below, and watch both videos available in the Hazard Communication Section.

**www.rncod.com/ecu**

*(if not in slideshow mode right click to “open hyperlink”)*

**User ID:** ecurnadmin

**Password:** tongo345

Open the 1st Program under the Hazard Communication Section, titled:

- **GHS: Labels and Safety Data Sheets - English**

The videos are the last 2 selections on the left side titled:

- “Video for Classroom Training - GHS Labeling 480x270”
- “Video for Classroom Training - GHS Safety Data Sheets 480x270”

If offered, *Do not take the quizzes* after the videos.
HAZARD COMMUNICATION UPDATES
QUIZ

To fulfill the training requirements, please complete the quiz below.

Hazard Communication Quiz

- If the PowerPoint is not in slideshow mode, right click the link and select “Open hyperlink”. If the presentation is in slideshow mode, just left click the link.

Thank you for your help in keeping ECU safe!