HAZARD COMMUNICATION STANDARD UPDATES 2013

East Carolina University

GLOBALLY HARMONIZED SYSTEM

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.

WHY ADOPT THE GHS?

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.

GHS LABELING REQUIREMENTS

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

NEW LABELS FROM MANUFACTURER

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

NEW LABELS FROM MANUFACTURER

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

NEW LABELS FROM MANUFACTURER

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

- <u>Examples:</u>
  - Keep container tightly closed.
  - Keep away from heat/sparks/open flame.

NEW LABELS FROM MANUFACTURER

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

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 (harmful) • 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** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

Health Hazard

- **Carcinogen**
- **Mutagenicity**
- **Reproductive Toxicity**
- **Respiratory Sensitizer**
- **Target Organ Toxicity**
- **Aspiration Toxicity**

- 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.

Exclamation Mark

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

- 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.

Skull and Crossbones

- **Acute Toxicity (fatal or toxic)**

- 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.

Flame

- **Flammables**
- **Pyrophorics**
- **Self-Heating**
- **Emits Flammable Gas**
- **Self-Reactives**
- **Organic Peroxides**

- 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).

Exploding Bomb

- **Explosives**
- **Self-Reactives**
- **Organic Peroxides**

- 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.

Environment
(Non-Mandatory)

- **Aquatic Toxicity**

- 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.

Gas Cylinder

• Gases Under Pressure

- 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.

Flame Over Circle

• Oxidizers

- 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.

Corrosion

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

- 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

CODE _____
Product Name_____

Product Identifier

Company Name_____
Street Address_____
City_____ State_____
Postal Code_____Country_____
Emergency Phone Number_____

Supplier Identification

Hazard Pictograms

Signal Word
Danger

Keep container tightly closed. Store in a cool, well-ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measures against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO_2) 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.

Precautionary Statements

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

Hazard Statements

Supplemental Information

Directions for Use

_____
_____
_____

Fill weight:_____ Lot Number:_____
Gross weight:_____ Fill Date:_____
Expiration Date:_____

SAFETY DATA SHEETS (SDS'S)

- 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.

SAFETY DATA SHEET SECTIONS 1-7

- **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.

SAFETY DATA SHEET SECTIONS 8-16

- **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.

NFPA:

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

Product name	:	Product XYZ			
Synonyms	:				
SDS Number	:	888100008809	**Version**	:	1.1
Product Use Description	:	Fuel			
Company	:				
			Chemtrec (Emergency Contact)	:	(800) 424-9300

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 :

Signal Word : **Danger**

SUPPLEMENTAL VIDEOS

- 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"**

  and
  - **"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!