HAZARD COMMUNICATION BACKGROUND

THE HAZARD COMMUNICATION STANDARD (HCS)

In 1983 the Occupational Safety and Health Administration (OSHA) enacted the Hazard Communication Standard (HCS) (29 CFR 1910.1200)

First major new standard since the original OSHA rules were published in 1971.

The intent, to give employees the **"Right to Know"** what chemical hazards they are exposed to in the workplace.

Required: chemicals produced or imported be evaluated and the information concerning their hazards be transmitted to employees via employers by;

- **Container labeling and other forms of warning,**
- **Material safety data sheets for chemicals,**
- **Training to be available and understandable to workers.**

THE HAZARD COMMUNICATION STANDARD 2012 REVISION

In 2012, OSHA reissued the HCS to integrate components of the **Global Harmonization System (GHS)** into the **OSHA Hazard Communication Standard.** The new standard is known by OSHA as **"HazCom 2012" and includes the following elements:**

Hazard classification: Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.

Labels: includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.

Safety Data Sheets: Will now have a specified 16-section format.

Information and training: required to train workers by December 1, 2013 on the new labels elements and safety data sheets format

The changes now give employees the **"Right to Understand"** what chemical hazards they are exposed to in the workplace.

GLOBAL HARMONIZATION SYSTEM (GHS)

GLOBAL HARMONIZATION SYSTEM (GHS)

The GHS is an acronym for The Globally Harmonized System of Classification and Labelling of Chemicals.

The GHS is a system for standardizing and harmonizing the classification and labelling of chemicals. It is a logical and comprehensive approach to:

- Defining health, physical and environmental hazards of chemicals;
- Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
- Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).

GHS Document ("Purple Book")

GHS – DEADLINES / MILESTONES

December 1, 2013

- Employers must train employees on the new label elements and safety data sheet (SDS) format.

June 1, 2015

- Chemical manufacturers, importers, distributors must complete hazard classification and implement GHS compliant labels and safety data sheets.

December 1, 2015

- The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label.

June 1, 2016

- Employers must update workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.

HAZCOM 2012
HAZARD CLASSIFICATION

WHAT IS CLASSIFICATION?

Classification is the starting point for hazard communication. It involves the identification of the hazard(s) of a chemical or mixture by assigning a category of hazard/danger using defined criteria. The GHS is designed to be consistent and transparent.

- Hazards include; physical, health and environmental.
- The data used for classification may be obtained from tests, literature, and practical experience.

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LABELING

GHS LABEL ELEMENTS

The standardized label elements included in the GHS are:

Symbols (hazard pictograms): Convey health, physical and environmental hazard information, assigned to a GHS hazard class and category.

Signal Words: "Danger" or "Warning" are used to emphasize hazards and indicate the relative level of severity of the hazard, assigned to a GHS hazard class and category.

Hazard Statements: Standard phrases assigned to a hazard class and category that describe the nature of the hazard.

GHS LABEL FORMAT

OSHA (800) 321-OSHA (6742)

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____
Product Name _____

SUPPLIER IDENTIFICATION

Company Name_____
Street Address _____
City _____ State _____
Postal Code _____ Country _____
Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in 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 measure 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 (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD

Danger

HAZARD STATEMENT

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

SUPPLEMENTAL INFORMATION

Directions for use

_____
_____
_____

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

PRODUCT IDENTIFIER

Product identifier: How the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number.

The manufacturer, importer or distributor can decide the appropriate product identifier.

The same product identifier must be both on the label and in Section 1 of the SDS (Identification).

SIGNAL WORD

The signal word is used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label.

"Danger" is used for the more severe hazards

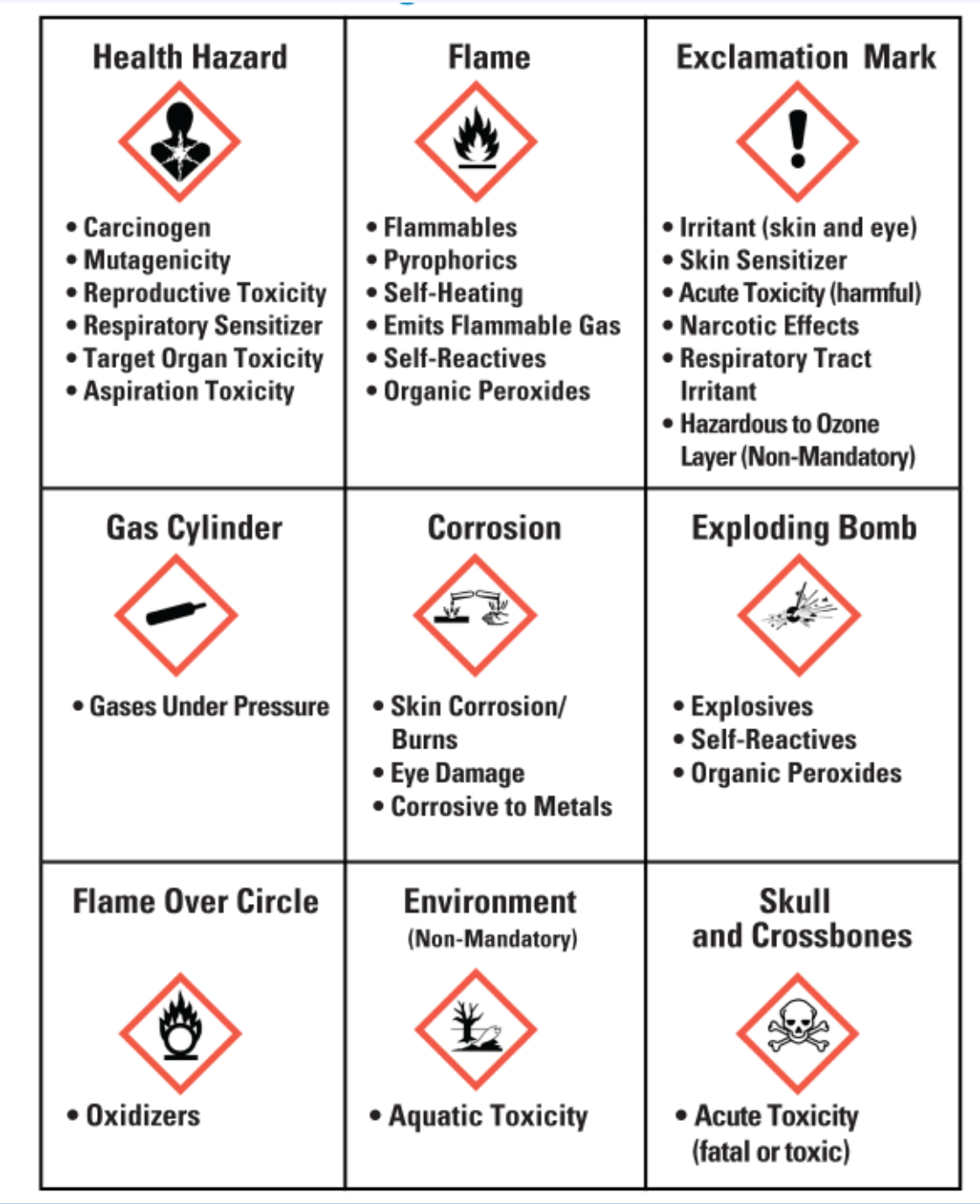
"Warning" is used for the less severe hazards.

There will only be one signal word on the label no matter how many hazards a chemical may have.

PICTOGRAM

OSHA's (GHS-compliant) labels contain one or more pictograms which *convey information* about chemical hazards in the work place.

While the GHS uses a total of nine pictograms, OSHA will only enforce the use of eight. *The environmental pictogram is not mandatory but may be used to provide additional information.*



HAZARD STATEMENT

Hazard statements are standardized and assigned phrases that describe the hazard(s) as determined by hazard classification. An appropriate statement for each GHS hazard should be included on the label for products possessing more than one hazard.

Hazard statements may be combined where appropriate to reduce redundancies and improve readability.

All of the applicable hazard statements must appear on the label.

For example:

"Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin."

OTHER GHS LABEL ELEMENTS INCLUDE

Precautionary Statements and Pictograms:

Measures to minimize or prevent adverse effects.

Supplier identification:

The name, address and telephone number should be provided on the label.

Supplemental information:

Non-harmonized information.

HOW ARE MULTIPLE HAZARDS HANDLED ON LABELS?

For physical hazards the precedence of symbols should be followed according to the rules of the UN Model Regulations.

For health hazards the following principles of precedence apply for symbols:

(a) if the skull and crossbones applies, the exclamation mark should not appear;

(b) if the corrosive symbol applies, the exclamation mark should not appear where it is used for skin or eye irritation;

(c) if the health hazard symbol appears for respiratory sensitization, the exclamation mark should not appear where it is used for skin sensitization or for skin or eye irritation.

HAZCOM 2012

SDS

SAFETY DATA SHEETS

WHAT IS THE SAFETY DATA SHEET?

The Safety Data Sheet (SDS) provides comprehensive information for use in workplace chemical management. The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical.

Employers and workers use the SDS as sources of information about hazards and to obtain advice on safety precautions.

The SDS is product related and, usually, is not able to provide information that is specific for any given workplace where the product may be used.

Information in a SDS also provides a source of information for other target audiences such as those involved with the transport of dangerous goods, emergency responders, poison centers, those involved with the professional use of pesticides and consumers.

SDS OUTLINE

The information in the SDS should be presented using the following 16 sections, in the order given below.

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.

SECTION 1
IDENTIFICATION

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- **Product identifier** used on the label and any other common names or synonyms by which the substance is known.
- **Name, address, phone number** of the manufacturer, importer, or other responsible party, and emergency phone number.
- **Recommended use of the chemical** (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).

SECTION 2
HAZARDS IDENTIFICATION

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- **The hazard classification of the chemical (e.g., flammable liquid, category).**
- **Signal word.**
- **Hazard statement(s).**
- **Pictograms.**
- **Precautionary statement(s).**
- **Description of any hazards not otherwise classified**.

For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity.

SECTION 3
COMPOSITION/INFORMATION ON INGREDIENTS

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities, stabilizing additives and trade secret. The required information consists of:

Substances

- ❑ Chemical name.
- ❑ Common name and synonyms.
- ❑ Chemical Abstracts Service (CAS) number and other unique identifiers.
- ❑ Impurities and stabilizing additives

Mixtures

- ❑ Same information required for substances.
- ❑ The chemical name and concentration of all ingredients which are classified as health hazards.
- ❑ The concentration of each ingredient must be specified except concentration ranges may be used in the following situations:
  - ❑ A trade secret claim is made,
  - ❑ There is batch-to-batch variation, or
  - ❑ The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- ❑ A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

SECTION 4
FIRST AID MEASURES

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- **Necessary first-aid instructions** by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- **Description of the most important symptoms or effects**, and any symptoms that are acute or delayed.
- **Recommendations for immediate medical care** and special treatment needed, when necessary.

SECTION 5
FIRE-FIGHTING MEASURES

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- **Recommendations of suitable extinguishing equipment,** and information about extinguishing equipment that is not appropriate for a particular situation.
- **Advice on specific hazards** that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- **Recommendations on special protective equipment** or precautions for firefighters.

SECTION 6
ACCIDENTAL RELEASE MEASURES

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment.

- **Use of personal precautions** (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- **Emergency procedures**, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- **Methods and materials used for containment** (e.g., covering the drains and capping procedures).
- **Cleanup procedures** (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up).

SECTION 7
HANDLING AND STORAGE

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- **Precautions for safe handling**, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).

- **Recommendations on the conditions for safe storage**, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements).

SECTION 8
EXPOSURE CONTROLS / PERSONAL PROTECTION

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- **OSHA Permissible Exposure Limits (PELs),** American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- **Appropriate engineering controls** (e.g., use local exhaust ventilation, or use only in an enclosed system).
- **Recommendations for personal protective measures** to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- **Any special requirements for PPE**, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

SECTION 9
PHYSICAL AND CHEMICAL PROPERTIES

This section identifies physical and chemical properties associated with the substance or mixture.
The minimum required information consists of:

- **Appearance (physical state, colour etc).**
- **Odour.**
- **Odour threshold.**
- **PH.**
- **Melting point/freezing point.**
- **Initial boiling point and boiling range.**
- **Flash point.**
- **Evaporation rate.**
- **Flammability (solid, gas).**
- **Upper/lower flammability or explosive limits.**
- **Vapour pressure.**
- **Vapour density.**
- **Relative density.**
- **Solubility(ies).**
- **Partition coefficient: n-octanol/water.**
- **Auto-ignition temperature.**
- **Decomposition temperature.**

SECTION 10
STABILITY AND REACTIVITY

This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

Reactivity

- ❑ Description of the specific test data for the chemical(s).

Chemical stability

- ❑ Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions.
- ❑ Description of any stabilizers that may be needed to maintain chemical stability.
- ❑ Indication of any safety issues that may arise should the product change in physical appearance.

Other

- ❑ Indication of the possibility of hazardous reactions.
- ❑ List of all conditions that should be avoided (e.g., static discharge, shock, vibrations).
- ❑ List of all classes of incompatible materials with which the chemical could react to produce a hazardous situation.
- ❑ List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating.

SECTION 11
TOXICOLOGICAL INFORMATION

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- **Information on the likely routes of exposure**. *The SDS should indicate if the information is unknown.*
- **Description of the delayed, immediate, or chronic effects** from short- and long-term exposure.
- **The numerical measures of toxicity** (e.g., acute toxicity estimates such as the LD50 (median lethal dose)).
- **Description of the symptoms** associated with exposure to the chemical.
- **Indication of whether the chemical is listed** in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA.

SECTION 12
ECOLOGICAL INFORMATION

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms.
- Whether there is a potential for the chemical to persist and degrade in the environment.
- Results of tests of bioaccumulation potential, where available.
- The potential for a substance to move from the soil to the groundwater.
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

SECTION 13
DISPOSAL CONSIDERATIONS

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities.

SECTION 14
TRANSPORT INFORMATION

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number.
- UN proper shipping name.
- Transport hazard class(es).
- Packing group number, if applicable, based on the degree of hazard.
- Environmental hazards.
- Guidance on transport in bulk.
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

SECTION 15
REGULATORY INFORMATION

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- **Any national and/or regional regulatory information** of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations).

SECTION 16
OTHER INFORMATION

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version.

- Other useful information also may be included here.

HAZCOM 2012
FINAL THOUGHTS

FINAL THOUGHTS

The information on the label can be used to ensure proper storage of hazardous chemicals.

The GHS label might be used to quickly locate information on first aid when needed by employees or emergency personnel.

When there are similar precautionary statements, the one providing the most protective information will be included on the label.

If a chemical has multiple hazards, different pictograms are used to identify the various hazards.

QUIZ

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