MODULE FOUR

Hazard Communication

Learning Objective:

Upon completion of this unit you will be able to summarize the components of the OSHA hazard communications standard and implement a compliant HazCom plan for your farm.

Learner Outcomes:

You will be able to:

1. Identify employer requirements and responsibilities as outlined in the OSHA Hazard Communication Standard (HCS)(OSHA 29CFR1910.1200 - Issued in 1983).
2. List the main sections of a written Hazard Communication Program and describe appropriate information to include for each section.
3. Identify label requirements and warning signs.
4. Identify main sections of a Material Safety Data Sheet (MSDS) and define key terms found in each section.
5. Identify key components for preparing and implementing an employee-training program for Hazard Communication.
6. Review the new Globally Harmonized System for Classification and Labeling of Chemicals and interpret major changes from the current Hazard Communication Standard.

Notes

Introduction

The Hazard Communication Standard can be found in 29 CFR 1910.1200.

This standard is sometimes called the HazCom or the "Right to Know" standard.

- Workers have the "right to know" about chemical hazards in their workplace.
- Workers need to be instructed on how to protect themselves against those hazards so the incidence of injuries and illnesses from hazardous chemicals is reduced.
- The Hazard Communication Standard is the most frequently cited standard for dairy farms. **OSHA website*
- It is important for dairy producers to understand the components of this standard in order to assure a safe and healthy workplace for employees.
- Chemical manufacturers have the primary responsibility for determining why the chemical is hazardous and providing that information to the employers who buy the chemicals.
- Manufacturers design appropriate labels for the containers and distribute technical documents called Material Safety Data Sheets or MSDSs.

Hazard Communication Program

The Hazard Communication Standard requires that any workplace where a worker may be exposed to hazardous chemicals have a Hazard Communication Program.

There are 5 main elements to a Hazard Communication Program:

- Inventory of hazardous chemicals and hazard assessment
- System for maintaining MSDSs
- Chemical labels and warning signs
- Training programs
- Written Hazard Communication Program

Notes

Notes

Inventory of Hazardous Chemicals

Take the following steps when creating your inventory:

1. Take a physical inventory of chemicals used and create a list.
2. Determine if an MSDS is on file for each chemical.
3. If any MSDSs are missing contact the supplier to provide a copy. Document this request and keep a record on file until the MSDS is received.

Employees should not be allowed to use any chemical that does not have an MSDS on file. The MSDS provides the information needed to ensure proper protective measures for exposure have been implemented.

Toolbox 1- Template letter for MSDS request

Toolbox 2- Template for chemical inventory

It cannot be understated that ***eliminating*** hazardous chemicals by ***substituting*** a less hazardous alternative is always preferred!

Hazard Assessment

- The employer is responsible for assessing the hazards of the chemicals used.
- Each chemical must be evaluated for its potential to cause adverse health effects.
- This information can be obtained by reading the container label and by reviewing a copy of the MSDS.

A hazardous chemical is one that has either a physical or a health hazard.

Physical hazard: A chemical with scientific evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, unstable, or water reactive.

Health hazard: A chemical with scientific evidence that acute (immediate) or chronic (long-term) health effects may occur in employees who are exposed. OSHA considers chemicals to be "health hazards" if they are carcinogens, toxic, irritants, corrosives, sensitizers, or damaging to lungs, skin, mucous membranes, or eyes (to name a few).

Where to find lists of hazardous chemicals:

- 29CFR 1910, Subpart Z are considered hazardous in all cases.
- "The Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment", published by the American Conference of Governmental Industrial Hygienists (ACGIH).

Standard Requirements:

- Employers must keep a copy of the MSDS for each hazardous chemical in the workplace.
- The MSDS must be "readily available" to employees.
- The MSDSs must be in English. It is certainly acceptable to keep copies in other languages but all master copies must be in English.

The employer must also:

- Designate a person responsible for obtaining and maintaining the MSDSs.
- Determine a process for maintaining the MSDSs (paper copies in binders, online access, etc.)
- Inform employees on how to access MSDSs.
- Define procedures for updating when new chemicals are purchased or significant health information is found.
- Retain copies of old MSDSs for 30 years following disuse of the chemical.

Material Safety Data Sheets are prepared by the chemical manufacturer.

- Currently there is no specified format for the MSDS; each chemical manufacturer can create their own design for the information. (This will be changing with the Globally Harmonized System.)
- OSHA has developed a non-mandatory format, OSHA Form 174

Notes

Notes

There are eight sections with specific information that must be shared:

- Manufacturer's name, address, and general information
- Hazardous ingredients identity information
- Physical/chemical characteristics
- Fire and explosion hazard data
- Reactivity data
- Health hazard data
- Precautions for safe handling and use
- Control measures

Hazard Classification

The National Fire Protection Association (NFPA) has its own visual diamond to depict the hazard associated with a specific chemical along with a numerical rating system.

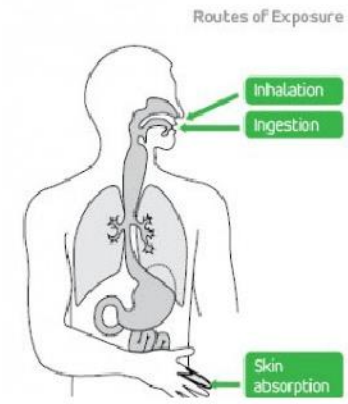
Copper Sulfate has a health rating of "3" per the NFPA diamond. What does this mean in terms of the hazardous nature of this material?

The Hazardous Material Identification System (HMIS) also has it's own design. The numbering system related to the hazards is the same.

Routes of entry

Routes of entry include

- Inhalation
- Skin absorption
- Ingestion
- Injection



Copper sulfate route of entry:

Inhalation: irritation to the mucus membrane and upper respiratory tract.

Skin absorption: slight skin irritation

Ingestion: toxic

Eyes: severe irritation, irreversible damage

Injection: not an issue

Current nine hazard classifications: (Soon to be 16 in GHS)

- Explosives
- Gases
- Flammable liquids
- Flammable solids
- Oxidizers
- Toxic
- Radioactive
- Corrosive (acids and bases)
- Miscellaneous dangerous goods

Flammability

Flammability is defined as how easily something will burn or ignite, causing fire or combustion.

Flammable liquids include, but are not limited to:

- Gasoline
- Ethanol
- Isopropanol
- Methanol
- Acetone

Corrosive

A corrosive material is a chemical that causes destruction of living tissue by chemical action at the site of contact

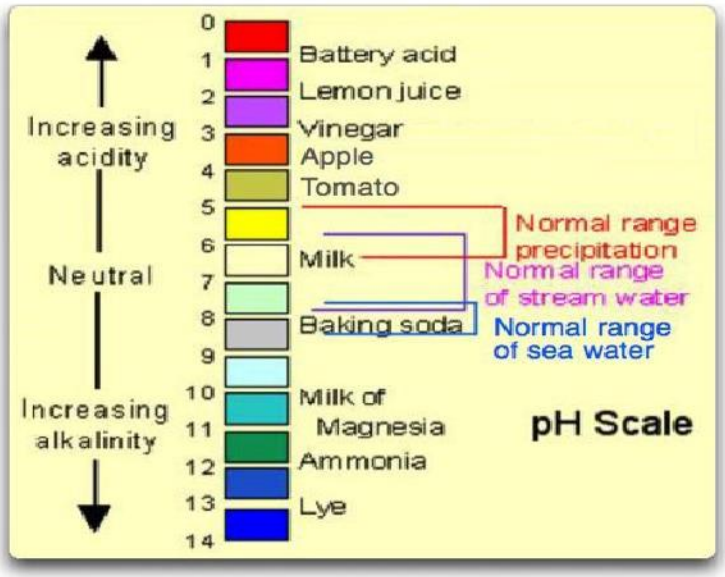
- A corrosive can be a solid, liquid or gas
- Note: Chemicals which cause reversible inflammatory effect on living tissue are called "irritants."

pH

- A scale of 0-14 that represents the acidity or alkalinity of an aqueous solution.
- Pure water has a pH of 7 and is considered a neutral solution
- Acids have a pH < 7
- Bases have a pH > 7
- Particular safety concerns on the extremes of the pH scale

Notes

Notes



CHEMICAL pH: A copper sulfate foot bath starts with a pH of 6 in 5% solution, as cows walk through and manure accumulates the pH will rise decreasing the efficiency of the footbath.

Flashpoint

- A material's flash point is a measure of how easy it is to ignite the vapor of the material as it evaporates into the atmosphere.
- A lower flash point indicates higher flammability.
- Materials with flash points below 100 °F (38 °C) are regulated in the United States by OSHA as potential workplace hazards.

Sensitization

An allergic reaction that develops over time. Symptoms include:

- Dizziness
- Eye and throat irritation
- Chest tightness
- Nasal congestion

A worker may become sensitized at any point during job exposure.

Examples: latex, formaldehyde

Target organ effects

Target organ effects indicate which bodily organs are most likely to be affected by exposure to a substance. (lungs, liver, kidneys, skin, and central nervous system).

Chemical Labels and Warning Signs

Proper labeling of hazardous chemicals is a key component of a Hazard Communication Program.

Employers purchasing chemicals rely on the manufacturer to supply the proper label on the chemical container.

Chemical manufacturers, importers, and distributors must be sure that containers of hazardous chemicals leaving the workplace are labeled, tagged, or marked with:

- the identity of the chemical
- appropriate hazard warnings
- the name and address of the chemical manufacturer, importer, or other responsible party

If the chemical is transferred to another container, the employer is responsible for properly labeling the new container.

Exemptions:

Consumer products (i.e. household cleaners, office supplies) having labels meeting requirements of the Consumer Product Safety Act do not have to have additional labeling under the HazCom Standard.

Various other chemical products (pesticides, foods, drugs, cosmetics, beverage alcohols) that are subject to labeling laws administered by other federal agencies are also exempt from the labeling requirements of the HazCom Standard. This includes the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA).

Portable containers do not have to be labeled when they contain hazardous chemicals that were transferred from labeled containers if they are used immediately by the person who made the transfer. (Best practice would dictate that all containers should be labeled so there is no confusion).

Notes

Notes

Employers may use other signs, placards, batch tickets, operating procedures or other written procedures instead of affixing labels to individual stationary process containers, as long as the method identifies the specific container.

Employer labeling responsibility

The employer is required to ensure that all containers are labeled (with the exceptions noted above) with the identity of the chemical and the appropriate hazard warning(s) including the effects on target organs. Labels must be in English. (Labels with other languages can be added but not substituted for English.)

Employee Training

Each employee who may be exposed to hazardous chemicals in the workplace must be provided information and trained BEFORE their initial assignment and whenever the hazard changes.

How to train employees:

- Discuss MSDSs, explain hazards of the chemicals, safety measures, PPE, what to do if there is an exposure, and clean up of chemical spill.
- Use a variety of audiovisuals, classroom instruction, interactive videos for the training.
- Training must be carried out in a language and literacy level that is comprehensible to the employees.
- Training may be conducted by grouping the like chemicals together rather than training for each individual chemical. Possible groupings to use are: carcinogens, sensitizers, acutely toxic agents, irritants, flammables.
- Train based on what chemicals each employee will be potentially encountering during the course of his or her normal duties.

Employees who have been previously trained by another employer, union, or other entity, do not have to be retrained if the previous training is sufficient to meet the standard's training requirements for the current work being performed.

Best safety practices would include obtaining a copy of previous test materials and records of training.

All employees must have information about where to find MSDSs in the workplace, who in the company is responsible for the HazCom program, and where to get copies.

Remember: the purpose of the Hazard Communication Program is to reduce the incidence of illnesses and injuries related to chemical exposure. As the employer, you are responsible for increasing understanding and reducing risks for your employees.

Training programs - recordkeeping

Record-keeping is an important part of an effective employee training program. Examples of recordkeeping documents that could be included in the Hazard Communication Program include:

- Notices that are posted informing employees of the training opportunity.
- Employee sign-in sheet that includes the session date, topic, printed employee name, employee signature, name of instructor and qualifications, and a short outline of topics discussed.
- Evaluation or quiz completed by the employee indicating employees understanding of the session content.

Written Hazard Communication Program

There are several components of a written Hazard Communication Program:

- Inventory list of hazardous chemicals on the site.
- Procedures for obtaining the MSDSs for each hazardous chemical and how the MSDS collection will be managed. (Include who is responsible, where MSDSs are kept, and how they will be made available to employees.)
- Procedures for labeling containers and posting warning signs.
- Outline for training and providing other essential information related to the Haz Com standard to current and new employees.
- Methods used to inform outside contractors and other outside employees of appropriate elements of the site Haz Com Program as it relates to the work the outside individuals are performing at the site.

Notes

Notes

Global Harmonization System (GHS)

OSHA's final rule to align its Hazard Communication Standard (HCS or HazCom) with the United Nation's Globally Harmonized System of Classification and Labeling of Chemicals (GHS) was published in the Federal Register on March 26, 2012.

HazCom 2012 (HCS12), the name OSHA has given this modified rule to help distinguish it from the previous version, was effective on May 25, 2012. This is when stakeholders covered by HCS can begin complying with provisions of the modified standard. After this date, employers, distributors and manufacturers will need to prepare to meet a series of phased- in compliance deadlines, the first of which is Dec. 1, 2013.

Implementation chart. Appendix M3.3

Three major areas of change

- Hazard classification: The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.
- Labels: Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- Safety Data Sheets (SDS): Will now have a specified 16-section format, and will change from MSDS to SDS.

The hazard classifications have expanded from 9 to 16:

- Explosives
- Flammable Gases
- Flammable Aerosols
- Oxidizing Gases
- Gases Under Pressure
- Flammable Liquids
- Flammable Solids
- Self-Reactive Substances
- Pyrophoric Liquids
- Pyrophoric Solids
- Self-Heating Substances
- Substances which, in contact with water, emit flammable gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to Metals

Under the current Hazard Communication Standard (HCS), the label preparer must provide the identity of the chemical, and the appropriate hazard warnings.

Under the revised HCS12, once the hazard classification is completed, the standard specifies what information is to be provided for each hazard class and category.

Labels will require the following elements:

- Pictogram: a symbol plus other graphic elements, such as a border, background pattern, or color that is intended to convey specific information about the hazards of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required under the HCS. Appendix M3.4
- Signal words: a single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.
- Hazard statement: a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.
- Precautionary statement: a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling of a hazardous chemical.

Notes

Notes

The format of the 16-section safety data sheet (SDS) should include the following sections:

Section 1. Identification

Section 2. Hazard(s) identification

Section 3. Composition/information on ingredients

Section 4. First-Aid measures

Section 5. Fire-fighting measures

Section 6. Accidental release measures

Section 7. Handling and storage

Section 8. Exposure controls/personal protection

Section 9. Physical and chemical properties

Section 10. Stability and reactivity

Section 11. Toxicological information

Section 12. Ecological information

Section 13. Disposal considerations

Section 14. Transport information

Section 15. Regulatory information

Section 16. Other information, including date of preparation or last revision

Sections 12-15 may be included in the SDS, but are not required by OSHA.

The GHS does not include harmonized training provisions, but recognizes that training is essential to an effective hazard communication approach.

The revised HCS requires that workers be re-trained within two years of the publication of the final rule to facilitate recognition and understanding of the new labels and safety data sheets.

Resources:

Hazard Communication Main Page http://www.osha.gov/dsg/hazcom/index.html

A Guide to the Globally Harmonized System of Classification and Labeling of Chemicals

http://www.osha.gov/dsg/hazcom/ghs.html#3.0

Review Module Three:

1. What are the five main components of a Hazard Communication Program? _____

_____

_____

2. What are some examples of hazardous chemicals you may encounter on your farm? _____

_____

_____

3. What information must be included in a chemical inventory? _____

_____

_____

4. Through what routes can a person be contaminated by a chemical? _____

_____

_____

5. What is the purpose of global harmonization? _____

_____

_____

Notes

Notes