



GILES CHEMICAL ~ PREMIER MAGNESIA
102 Commerce Street, Waynesville, NC 28786
DOT Hazardous Materials Training Program



Title: Hazard Communication Safety Training Handout	Number: S16-PG-200-011
Owner: Deborah Durbin	Revision: 0
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Hazard Communication Safety Training

I. Introduction

Approximately 32 million workers work with and are potentially exposed to one or more chemical hazards. Chemical exposure may contribute to or cause many serious health problems such as heart ailments, central nervous system disorders, kidney and lung damage, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires, explosions and other serious accidents. The number of existing chemical products is estimated to be in the hundreds of thousands with hundreds of new ones being introduced annually. This poses a serious problem for exposed workers and their employers. This training program was developed to assist with training all employees concerning these chemical products and the hazards they present.

II. Overview of Training

This training program will instruct employees regarding the following:

- Contents of the OSHA standard
- Hazard Classification
- Who is covered by the standard
- Chemical labels
- Safety Data Sheets
- Understanding Chemicals
- Personal Protective Equipment
- Exposure to hazardous chemicals
- Leaks and spills

III. Contents of the OSHA Standard

The Occupational Safety and Health Administration created the Hazard Communication Standard 29 CFR 1910.1200, or HCS, to ensure the hazards of all chemicals produced or imported are classified, and information concerning the classified hazards is conveyed to employees by means of a hazard communication program, labels, Safety Data Sheets and training. Employees also need to know what protective measures are available to prevent adverse effects from occurring. The standard is based on a simple concept – Employees have both a need and a "right to know" the hazards and the identities of the chemicals to which they are exposed when working.

The HCS requires employers to:

- Keep an updated list of all hazardous chemicals in their workplaces.
- Obtain Safety Data Sheets and labels for each hazardous chemical.
- Establish and implement a written hazard communication program covering the list of chemicals, use of labels, Safety Data Sheets and employee training.
- Communicate hazard information to their employees.
- Provide equipment and training concerning protective measures to prevent exposure to chemicals and reduce the risk of working with hazardous chemicals.

The HCS does not apply to consumer products such as window cleaner, toilet bowl cleaner and dishwashing liquid, when used in the workplace in the same manner and with the same duration and frequency that a normal household consumer would use them at home.

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IV. Hazard Classification

The requirements of the HCS are intended to be consistent with the provisions of the Globally Harmonized System of Classification and Labeling of Chemicals. This worldwide system provides for more consistent and uniform classification and identification of chemicals and their potential hazards, creating a safer workplace for all employees.

- a. The HCS establishes uniform requirements to make sure the hazards of all chemicals imported, produced, or used in U.S. workplaces are classified.

Classification involves the following:

- Identifying relevant data regarding the hazards of a chemical;
 - Reviewing the data to ascertain the hazards, both health and physical, associated with the chemical and;
 - Determining if the chemical will be classified as hazardous and the degree of hazard where appropriate.
- b. Determination and classification of chemical hazards is the responsibility of the producers and importers of the chemical. Producers and importers are then required to provide the hazard information to affected employers and exposed employees.
 - c. The HCS has no requirement to test chemicals to determine how to classify their hazards. Classification is based on all available scientific literature and other evidence concerning the potential hazards. Additionally, Appendices A & B of the HCS should be consulted for the classification of health and physical hazards.
 - d. Hazard classification of chemical mixtures is based on procedures described in Appendices A & B of the HCS. Chemical manufacturers or importers of mixtures are responsible for the accuracy of its classification, even when relying on the classifications for individual ingredients received from the ingredient manufacturers or importers on the Safety Data Sheets.
 - e. Your employer is not required to classify chemicals unless they choose not to rely on the classification performed by the chemical manufacturer or importer for the chemical.

V. Who is Covered by the HCS

The HCS covers all hazardous chemicals and incorporates a downstream flow of information. Therefore, any company that deals with hazardous chemicals at some point is covered by the standard.

VI. Chemical Labels

OSHA recognizes the dangers of chemicals when used improperly and/or when employees don't realize the dangers due to lack of knowledge. The HCS is designed to eliminate potential dangers by ensuring employees have the information necessary to protect themselves and their coworkers. This information is provided in two forms:

Chemical Labels and Safety Data Sheets

Labels provide quick, important information about a chemical which could save your life. They are effective in communicating health and physical hazards, as well as how to minimize or prevent adverse affects resulting from exposure to the hazardous chemical or improper storage or handling. Labels are affixed to, printed on, or attached to the container of a hazardous chemical, or the outside packaging.

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OSHA requires the following label information:

- **Product Identifier** - This is the unique name or number used to identify a hazardous chemical.
- **Signal Word** - A word used to alert employees of a potential hazard and its relative level of severity. The two signal words used are:
 1. Danger - Used for more severe hazards
 2. Warning - Used for the less severe hazards
- **Hazard Statement** - A statement describing the nature of the chemical hazard, including, where appropriate, the degree of hazard.
- **Pictogram** - A composition which is intended to convey specific information about the hazards of a chemical. OSHA has mandated eight specific pictograms to be used on chemical labels. Each pictogram is in the shape of a square, set at point and includes a black hazard symbol on a white background, with a red frame sufficiently wide to be clearly visible.
- **Precautionary Statement** - A phrase describing recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of Precautionary Statements used on labels:
 1. Prevention - Statements meant to keep you from harm.
 2. Response - Statements providing steps to take if you have been exposed to a chemical hazard.
 3. Storage - Explains the safe way to store the chemical.
 4. Disposal - The last statement explains to the employer/employee how to dispose of the chemical safely.
- Chemical manufacturers, importers and distributors are responsible for labeling, tagging or marking each container. OSHA requires this information be prominently displayed in English on each container. OSHA also requires the name, address and telephone number of the manufacturer, importer or other responsible party be displayed on the shipped container.
- If the hazardous chemical is subsequently transferred by the employer from the primary container to a secondary container, the employer must label the secondary container. Employers are responsible for ensuring each container of hazardous chemicals in the workplace is labeled, tagged or marked with the appropriate information. Workplace labels must be legible, in English and prominently displayed on the container. Other languages may be used as long as the information is presented in English as well. Portable containers used to transfer hazardous chemicals from labeled containers and intended only for the immediate use of the employee who performs the transfer, do not require labels.
- For stationary process containers, such as storage tanks, the employer may use signs, placards, process sheets, batch tickets, operating procedures, or other written materials in lieu of affixing labels. This alternative method must identify the containers to which it is applicable and convey the information required on secondary containers. The written materials must be readily accessible to employees in their work area throughout each work shift.
- OSHA considers solids to be chemicals and they are covered by HCS. For such items as solid metal, solid wood, plastic items or shipments of whole grain, the required label may be transmitted to the customer at the time of initial shipment or with the SDS that is to be provided prior to or at the time of the initial shipment. Labels need not be included with subsequent

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shipments to the same customer unless the information on the label changes. This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself. Please refer to the CFR 1910.1200 HCS for additional information concerning such items and labeling.

VII. Safety Data Sheets

The SDS is a standardized, 16-section, detailed information bulletin prepared by the manufacturer or importer of a chemical that describes the chemical. It provides information about various aspects concerning the chemical including hazards, handling measures and safety precautions. Chemical manufacturers and importers must develop a SDS for each hazardous chemical they produce or import, and must provide the SDS automatically at the time of the initial shipment of a hazardous chemical to a downstream distributor or user. The SDS must be provided in English although the employer may maintain copies in other languages as well. Distributors must also ensure that downstream employers are similarly provided a SDS. The SDSs must be updated by the chemical manufacturer or importer within three months of learning of "new or significant information" regarding the chemical's hazard potential.

- Employers must maintain copies of the SDSs for each hazardous chemical and must ensure that they are readily accessible during each work shift to employees in their work area. Electronic access, microfiche and other alternatives to paper copies are permitted as long as no barriers to immediate access for employees in each work area are created by such options.
- Employers should prepare a list of all hazardous chemicals in the workplace and then check it against the SDSs on hand. If there are hazardous chemicals used for which no SDS has been received, the employer must contact the supplier, manufacturer or importer to obtain the missing SDS.

VIII. Understanding Chemicals

HCS recognizes the dangers of chemicals when used improperly and/or when employees don't realize the dangers due to lack of knowledge. Chemicals have both physical and health hazards and different routes of entry for exposure to the chemicals

a. Physical Hazards of Chemicals

Some of the physical hazards presented by chemicals include:

- Explosive - When a sudden, almost instantaneous release of pressure, gas, and heat occurs due to a chemical being subjected to sudden shock, pressure or high temperature.
- Flammable - When a chemical catches fire easily whether aerosol, gas, liquid or solid.
- Unstable - A chemical reacts adversely when subjected to other chemicals, temperature changes, water or air.

OSHA has mandated Appendix B of the HSC for determining and classifying the physical hazards associated with chemicals. There are 16 different classifications.

b. Health Hazards of Chemicals

Chemicals are also a source of many health hazards.

- Carcinogen - Defined as a chemical that causes cancer
- Corrosive - Defined as a chemical that can burn, destroy or eat away at eyes or skin on contact. Corrosives are either bases or acids. Bases have a high pH balance (PH means free ions of hydrogen). Acids have a low pH balance. Pure water has a pH balance of 7.0 and is neutral. You

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can neutralize/weaken both bases and acids by adding water. This is why job sites have emergency eyewash stations and showers.

- Toxin - Defined as a chemical that can cause sickness/illness, damage to specific organs and possibly cause death. The severity of damage depends on size of dose and exposure time.
- Irritant - Defined as a chemical that is not a corrosive, but which causes a reversible inflammatory effect at the site of contact.

OSHA has mandated 10 different health hazard classifications in Appendix A of the HCS. All chemicals are to be classified according to Appendix A regarding the health hazards they pose.

c. Routes of Exposure

Chemicals create health hazards when employees are exposed to them. The methods of exposure are called "routes of entry." There are three primary routes:

1. **Contact** - Contact with the skin or eyes, this is probably the most common route. Such contact can cause rashes and burns or vision problems. Some chemicals can enter the bloodstream through contact and can be very dangerous.
2. **Inhalation** - Breathing in chemicals is also very common. This can cause headaches, dizziness and possibly even death. Extreme damage can be caused to the lungs or throat.
3. **Swallowing** - Ingesting chemicals usually occurs when employees do not wash their hands before eating. Chemicals are passed onto the food item and ingested with the food. This can cause severe internal organ damage.

IX. Personal Protective Equipment (PPE)

To reduce the potential for risk of exposure, PPE should be worn that is appropriate for the chemical being used. Information on the correct PPE can be found on the chemical's label as well as the SDS. PPE is generally divided into three groups:

- Eye protections - safety glasses, goggles and face shields,
- Hand and body protection - gloves and aprons, and
- Respiratory - respirators, masks and self-contained breathing apparatus

X. Exposure to Hazardous Chemicals

Avoiding exposure to hazardous chemicals is extremely important. Following chemical and SDS warnings will help minimize exposure. If an employee is exposed, then steps need to be taken to limit the effects. First-aid instructions are listed on the SDS and should be followed until medical help arrives. First-aid might include:

- Flushing eyes with emergency eyewash.
- Removing contaminated clothing and washing contact area of body.
- Applying cool water on bum area.
- Moving to open area to get fresh air.

XI. Leaks and Spills

In the event a chemical is spilled or a leak occurs, the most important thing to remember is the safety and health of all employees. It is better to err on the side of safety in such cases.

Employees need to act quickly in such situations and generally do the following:

- Leave the area immediately and warn others
- Provide first-aid if needed

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- Inform appropriate personnel (i.e., managers, first responders)
- Shut operations down, if necessary

Employees should report the incident to their supervisor, as soon as possible. Some spills and leaks will require trained professionals to clean up the hazardous chemical. Do not return to that work area until it is safe to do so.

XII. Conclusion

OSHA's Hazard Communication Standard gives employees the right to know about chemical hazards in the workplace. Employers have obligations to provide employees with training, information, PPE and other safety measures dealing with chemical hazards.

Employees should remember to:

- Take training seriously and pay attention
- Read labels and SDSs
- Know where to find the SDSs
- Use appropriate PPE
- Know correct emergency procedures
- Use safe work habits

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