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TABLE OF CONTENTS

Hazard communication with GHS: What you need to know	1
What is GHS?	1
OSHA's HazCom 2012 rule	2
Exempted chemicals	2
GHS compliance phase-in period	2
Hazard classification—29 CFR 1910.1200(d) and 29 CFR 1910.1200, Appendices A and B	3
Labels, tags, and markings—29 CFR 1910.1200(f) and 29 CFR 1910.1200, Appendix C	4
Elements of a label, tag, or marking	5
GHS-compliant label	6
Pictograms and hazards	6
Outdated labels—Procedure to correct	7
Labeling Exemptions—Portable Containers and Pipes	8
SDSs—29 CFR 1910.1200(g) and 29 CFR 1910.100, Appendix D	9
Training—29 CFR 1910.1200(h)	10
State laws	
5 best practices to help you during the transition to HazCom 2012	12
Frequently asked questions	14

Hazard communication with GHS: What you need to know

Thousands of hazardous chemicals found in today's workplaces can cause health problems—from minor skin irritations to serious injuries or diseases like cancer.

Hazard communication rules were developed to make sure information about inherently hazardous chemicals is provided to employers and ultimately to employees so they become informed about chemical hazards found in the workplace. These rules apply if you:

- Have employees with potential for exposure to hazardous chemicals at work.
- Distribute hazardous chemicals to employers.
- Manufacture (produce) or import hazardous chemicals.

More than 5 million workplaces in the United States have environments where employees could be exposed to hazardous chemicals.

In 2012, the U.S. Occupational Safety and Health Administration (OSHA) adopted elements of the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS) into its revised Hazard Communication Standard, or HazCom 2012.

What is GHS?

The GHS is a system for standardizing how chemicals are labeled and classified across the globe. It provides a standardized way to determine how hazardous chemicals can affect health and safety. The GHS is intended to improve understanding of hazards and lead to better handling and use of chemicals in the workplace.

HazCom 2012 includes the following major requirements:

◆ Hazard classification: Chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under the new, updated standard provides specific criteria to address health and physical hazards, as well as classification of chemical mixtures. Sponsored by



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- ▶ **Labels:** Chemical manufacturers and importers must provide a label on all shipped hazardous chemical containers that include a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category.
- ◆ **Safety data sheets (SDSs):** The new standardized format requires 16 specific sections, ensuring consistency in presentation of important protection information.
- ◆ **Information and training:** To simplify understanding of the new system, the new standard required that all employers train their workers by December 1, 2013, on the new label elements and SDS format, in addition to the current training requirements.

These significant changes that impact employers, as well as chemical manufacturers, importers, and distributors, will be phased in through June 1, 2016.

OSHA's HazCom 2012 rule

HazCom 2012 is not a new regulation; it amends HazCom 1994 at 29 CFR 1910.1200. HazCom 2012 mostly maintains consistency with the GHS. The rule applies to any chemical that is known to be present in the workplace in such a way that employees may be exposed under normal conditions of use or in a foreseeable emergency.

Exempted chemicals

Hazardous wastes are exempted from the standard because there are special requirements for hazardous waste workers under the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) (29 CFR 1910.120, 40 CFR 264.16, and 40 CFR 265.16). Other exempted products are those subject to labeling of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); the Toxic Substances Control Act (TSCA); the Federal Food, Drug, and Cosmetic Act; and the Consumer Product Safety Act. Chemicals covered under TSCA are subject to the requirements of EPA's hazard communication rule.

GHS compliance phase-in period

OSHA will allow the two main groups of employers affected by the rule—chemical manufacturers/importers/distributors and employers with employees who use, handle, or store chemicals—the following phase-in or transition period to comply with the new GHS requirements.

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The first compliance deadline was December 1, 2013, when employers were required to have trained employees who work with hazardous chemicals on the elements of the GHS-compliant labels and the standardized 16-section SDS—formerly material safety data sheet (MSDS).

GHS Phase-In Compliance Dates Chart			
June 1, 2015 Chemical manufacturers/ importers/distributors	Comply with all the requirements of the GHS rule (e.g., hazard classification, SDS format), except compliance with the GHS label requirements is optional for distributors until December 1, 2015.		
December 1, 2015 Chemical manufacturers/ importers/distributors	All shipments of chemical containers must include the GHS-compliant label (signal word, pictogram, hazard statement, and precautionary statement).		
June 1, 2016 All employers that use, handle, store chemicals	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.		

Note about chemical distributors: Distributors other than a chemical manufacturer or importer must transmit the required information about SDSs and labels to employers that use, handle, and store the chemicals. Employers that do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers.

Hazard classification—29 CFR 1910.1200(d) and 29 CFR 1910.1200, Appendices A and B

The quality of the employer's hazard communication program depends on the adequacy and accuracy of the hazard evaluation and classification process—in other words, employers must know which chemicals in their workplace are hazardous.

Manufacturers and importers: Chemical manufacturers and importers must evaluate each chemical they produce or import in

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order to classify the chemicals and chemical mixtures according to their physical and health hazards.

For each chemical, the chemical manufacturer or importer must determine the hazard classes and, where appropriate, the category of each class that applies to the chemical being classified. The hazard evaluation process requires the chemical manufacturer to:

- ◆ Identify the relevant data regarding the hazards of a chemical;
- Review those data to determine the hazards associated with the chemical;
- Decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in the rule;
- Determine the degree of hazard where appropriate by comparing the data with the criteria for health and physical hazards.

Employers that are not chemical manufacturers or importers:

Employers that are not chemical manufacturers or importers and that receive chemicals into the workplace may choose to rely on the information in SDSs and chemical labels supplied by the chemical manufacturer or importer.

If an employer chooses not to rely on the classification performed by the chemical manufacturer or importer for the chemical, the employer must conduct its own hazard classification according to the same process prescribed for manufacturers and importers.

Labels, tags, and markings—29 CFR 1910.1200(f) and 29 CFR 1910.1200, Appendix C

The purpose of labels, tags, and markings is to give employees an immediate warning of hazardous chemicals and a reminder that more detailed information is available.

Each container of a hazardous chemical that is shipped by the manufacturer and used in the workplace must be properly labeled, tagged, or marked. A "container" is any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical.

A Hazard Not Otherwise Classified (HNOC) does not have to be addressed on the container label. "HNOC" means an adverse physical or health effect identified during the classification process that

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does not meet the specified criteria for the physical and health hazard classes addressed in Appendices A, B, and C of the rule. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in the rule, but the effect either falls below the cutoff value or concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA, such as Acute Toxicity Category 5.

Elements of a label, tag, or marking

Text in English. Each hazardous chemical label, tag, or marking must be prominently displayed, and text must be in English. Other languages may also be included, if appropriate.

Product identifier. The label, tag, or marking must include a "product identifier." The product identifier is the name or number that enables the user to identify the chemical. The identifier must allow cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label, and the SDS.

Signal word, pictogram, hazard statement, precautionary statement, and contact information. In addition to the product identifier, all of the following information must be provided together on a chemical label, tag, or marking, and in be compliance with the requirements of Appendix C of the rule:

- Signal word to indicate the relative level of severity of the hazard, such as the more severe word "danger" or the less severe "warning"
- Hazard statement(s) assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including the degree of hazard, where appropriate
- Pictogram(s) that may include a symbol and other graphic elements intended to convey specific information about the hazards of a chemical on a white background within a red diamond shape
- Precautionary statement(s) that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling
- Supplier identification with the name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

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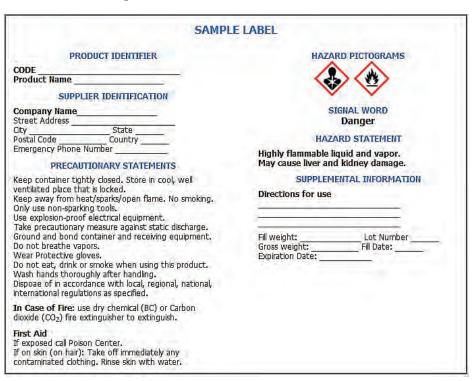
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The employer must not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

Hazardous chemical containers must include either:

- The label shipped with the chemical container; or
- A product identifier and combination of words, pictures, or symbols that provide at least general information regarding the hazards of the chemicals and provide employees with the specific information about the physical and health hazards of the chemical.

GHS-compliant label



Pictograms and hazards

As of June 1, 2015, HazCom 2012 will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

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Health Hazard	Flame	Exclamation Mark
		(!)
 Carcinogen Mutagenicity Reproductive Toxicity Respiratory Sensitizer Target Organ Toxicity Aspiration Toxicity 	• Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	 Irritant (skin and eye) Skin Sensitizer Acute Toxicity Narcotic Effects Respiratory Tract Irritant Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder	Corrosion	Exploding Bomb
• Gases Under Pressure	• Skin Corrosion/Burns	• Explosives
	• Eye Damage • Corrosive to Metals	• Self-Reactives • Organic Peroxides
Flame Over Circle	Environment (Non-Mandatory)	Skull & Crossbones
	**	
• Oxidizers	Aquatic Toxicity	Acute Toxicity (fatal or toxic)

Outdated labels—Procedure to correct

A chemical manufacturer, importer, or distributor that becomes aware of any significant new information about the hazards of a chemical must revise the labels for the chemical within 6 months of becoming aware of the new information and make sure the labels on Sponsored by



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containers of hazardous chemicals shipped after that time contain the new information.

If the chemical is not currently produced or imported, the information must be added to the label before the chemical is shipped again.

Employers purchasing chemicals can rely on the labels provided by their suppliers.

Labeling Exemptions—Portable Containers and Pipes

Employers are not required to label:

- Pipes or piping systems
- Portable containers transferred from a labeled container intended only for the immediate use of the employee who performs the transfer

As an alternative to labeling all individual process containers, employers can:

- Substitute various types of standard operating procedures, process sheets, batch tickets, blend tickets, and similar written materials for container labels on stationary process equipment if they contain the same information as the labels, and ensure written materials are readily accessible to employees in the work area throughout each work shift.
- Post signs or placards that convey the hazard information if there are a number of stationary containers within a work area that have similar contents and hazards.
- Use alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) as long as those systems are consistent with the GHS labeling system.

Alternatives must be consistent with GHS label system. All information supplied on the alternative labels must be consistent with the GHS label system; for example, there must be no conflicting hazard statement and pictogram.

If an employer becomes aware of any significant new information about the hazards of a chemical, the employer must revise the labels for the chemical *within 6 months* of becoming aware of the new information. The employer must also ensure that labels on containers of hazardous chemicals contain the new information.

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If the chemical is not currently produced or imported, the employer must add the information to the label before the chemical is introduced into the workplace again.

SDSs—29 CFR 1910.1200(g) and 29 CFR 1910.100, Appendix D

Because HazCom 1994 did not establish a uniform format, there are currently a number of different MSDS styles and formats in use in the United States. HazCom 2012, on the other hand, mandates the use of a universal GHS format for the SDS, a format that is a strict 16 sections. In short, the format is being standardized for ease of training and notification of hazards. However, during the 3-year phase-in period to HazCom 2012, employers should expect their MSDS library to have a mix of non-GHS formatted MSDSs and the GHS-formatted SDSs until the phase-in is complete when the chemical manufacturers, distributors, and importers have reclassified all of their chemicals using the GHS criteria. Many chemical manufacturers, importers, and distributors will be making the shift to the GHS-compliant SDSs in stages—they have until June 1, 2015. (Distributors have until December 1, 2015.)

The 16 sections in an SDS are required in the following order with the following headlines:

Section 1: Identification includes product identifier; manufacturer or distributor name, address, and 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 include information on chemical ingredients; trade secret claims.

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

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

Section 6: Accidental release measures list emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7: Handling and storage list precautions for safe handling and storage, including incompatibilities.

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Section 8: Exposure controls/personal protection list OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9: Physical and chemical properties list the chemical's characteristics.

Section 10: Stability and reactivity list 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 and any other pertinent information.

*Note: Since other agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

Training—29 CFR 1910.1200(h)

Employers must provide employees with effective information and training concerning hazardous chemicals in their work areas at the time of the initial assignment and whenever a new chemical hazard is introduced into the work area. The information and training must be specific to the kinds of hazards in the workplace and the particular protective equipment, control measures, and procedures that are necessary.

Employees must be given information about:

- The hazard communication standard and its requirements;
- The location of workplace areas or operations where hazardous chemicals are present; and
- Where the chemical list(s), SDSs, written hazard classification procedures (if applicable), and written hazard communication program will be kept.

OSHA's requirements for employee information and training are flexible, allowing a company to design a program tailored to its needs and operations. Employee training must include:

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- The methods and observations used to detect the presence or release of a hazardous chemical in the work area, such as monitoring conducted by the employer, continuous monitoring devices, visual appearance, or odor of hazardous chemicals when being released;
- ◆ The physical, health, simple asphyxiation, combustible dust, pyrophoric gas, and other hazards not otherwise classified of the chemicals in the work area;
- The protective measures for employees;
- ♦ How workers can detect the presence of a hazardous chemical;
- ◆ The specific protective procedures the employer is providing, such as engineering controls, work practices, and PPE; and
- An explanation of the labels received on shipped containers, the workplace labeling system used, and an explanation of the SDS, including the standard chronological order of information on the SDS and how employees can use the appropriate hazard information.

Note: To ensure employee understanding is effective, train on MSDS and SDS formats as long as there are MSDSs in the workplace. Because there is a 30-month transition period, if employers have MSDSs in their workplace, they must include training on those MSDSs in their training program. We are not aware of any statement from OSHA to stop training employees to interpret the old MSDSs if they are still used in the workplace.

Provide additional employee training by June 1, 2016. Employers must provide additional employee training for new physical or health hazards identified by the employer or described in SDSs or chemical labels since the last training.

State laws

Private sector employers (private businesses and nonprofit organizations) governed by an OSHA-approved state safety and health regulatory program are required to comply with state worker right-to-know standards, which are, in some cases, stricter than federal requirements.

Federal OSHA standards do not apply in public sector workplaces (except federal agencies and facilities) because they do not regulate state, county, or municipal government offices or operations. Some states without OSHA-approved regulatory programs for private sector workplaces have adopted worker right-to-know standards that apply to state, county, or municipal workplaces.

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5 best practices to help you during the transition to HazCom 2012

Following are tips for complying with OSHA's top most violated standard in general industry:

- 1. **Be prepared and develop a plan**. Have a designated employee in charge of the transition. Your employee must understand GHS and the compliance deadlines. *Transition:* During the period of transition, you can be compliant with either the old HazCom 1994 or the new HazCom 2012 (or a combination of the two). At no time during the transition can employers let protections drop for employees.
- 2. Inventory the chemicals in your workplace. This will not only save you time in updating for chemicals no longer present but also ensure you have up-to-date MSDSs/SDSs for all the chemicals in your workplace to which your employees are exposed. The latest SDS for each hazardous chemical must be made available in the workplace; all your employees must be able to access SDSs at all times. This means a supervisor's permission is not required, and the SDS access management system is always functional.

The chemical manufacturer, importer, or employer preparing the SDS is responsible for the accuracy of the information provided on their SDSs. The preparer must ensure that the information provided accurately reflects the scientific evidence used in making the hazard classification. If you rely on SDSs supplied by a manufacturer, importer, or distributor, you are not liable for their accuracy as long as you have accepted the SDS in "good faith"; that is, without blank spaces or obvious inaccuracies. You should report inaccurate or missing information on an SDS to the chemical manufacturer or distributor.

For employers that do their own evaluation or classification of a chemical, OSHA will hold them responsible for the accuracy of the SDS.

3. Review and update your (M)SDS management system. OSHA expects that you have a plan in place to ensure that as updated SDSs come into your organization, they are handled properly. This means having a management system in place comparing the new SDSs to the old ones to see if there are any new hazards that employees need to be trained on to understand what they are working with and ensuring the updated documents are made available to employees in a timely fashion.

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- 4. Update workplace labels and develop secondary container labeling strategy. By June 1, 2016, you must update alternative workplace labels to be GHS compliant, which include a combination of product identification, signal words, and pictograms. There are two types of labels:
 - **a. Primary labels**—use on containers of hazardous chemicals shipped from the chemical manufacturer, importer, or distributor.
 - **b. Secondary/alternative labels**—these are workplace labels. You may choose to label secondary containers with either the same label that came on the shipped chemicals or with alternative workplace labels. While secondary containers have always been required to be labeled, they will now need to provide the same level of information to employees as the primary label. A best practice is to replicate the primary container label.
- 5. Training Program. Along with labels on containers and SDSs, employee training is one of the core components of a comprehensive hazard communication program. Remember that under HazCom 2012, your employees not only have the right to know but also the right to understand the chemicals in the workplace and how to handle them safely. Training is needed to explain and reinforce the information presented in the SDSs and on the chemical container labels to ensure that your employees understand the chemical hazards in their workplace and are aware of the protective measures they need to follow.

Creating an effective HazCom 2012 training program may actually be easier than before because of the standardized format of the SDS that may improve hazard communication overall. As part of the training, your employees must understand the standardized headings and sequence of information on SDSs. Although written information is important, training is an opportunity to explain the information on the SDS and helps to ensure that the messages are being received accurately.

To ensure employee understanding is effective, train on MSDS and SDS formats as long as you have MSDSs. Keep in mind that because there is a 30-month transition period, if you have MSDSs in your workplace, you must include training on those MSDSs in your training program. We are not aware of any statement from OSHA to stop training employees to interpret the old MSDSs if they are still used in the workplace. Nevertheless, your employees need to know the SDS universal format.

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Frequently asked questions

Q: Who will be affected by HazCom 2012 GHS? Who has to comply with GHS?

A: HazCom 2012 affects any company that has chemicals in the workplace. All employers with hazardous chemicals in their workplaces must have labels and SDSs for their exposed workers, and train them to handle the chemicals appropriately.

Q: Do all employees need to be trained?

A: OSHA believes that effective training is a key part of hazard communication. All employees must be informed of the presence of hazardous chemicals and where they are used in the workplace. While written information is important, it is training that provides an opportunity to explain specific information, measures to detect, procedures to follow, and PPE that workers can use to protect themselves from these hazards.

Q: Does HazCom 2012 apply to office settings?

A: Office workers who encounter hazardous chemicals only in isolated instances are not covered by the rule. OSHA considers most office products to be exempt under the provisions of the rule, either as articles or as consumer products. For example, OSHA has previously stated that intermittent or occasional use of a copying machine does not result in coverage under the rule. However, if an employee handles the chemicals to service the machine or operates it for long periods of time, the program would have to be applied.

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