

# What Every Employer Needs to Know About HazCom and GHS

The Globally Harmonized System for Classifying and Labeling  
Chemicals and the Hazard Communication Standard



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J. J. Keller & Associates, Inc.®



# What Every Employer Needs to Know About HazCom and GHS

## The Globally Harmonized System for Classifying and Labeling Chemicals and the Hazard Communication Standard

Many chemicals pose hazards to humans and to the environment from “cradle to grave,” that is, from initial production through final disposal. Exposure can occur at any point, which is why it is important for those who create, transport, use, handle, or who may be exposed to chemical hazards to understand the risks.

Globalization of the chemical trade means that these chemicals are routinely being used by people from all cultures who use different languages and alphabets, and come from different social conditions and educational backgrounds. Current chemical labeling does not address such diverse populations.

A lack of uniformity among national chemical hazard regulations has led to incompatible or conflicting hazard definitions, warnings, and container labels. In some countries, a chemical may be classified as hazardous, while in others it isn't.

### A global solution

The United Nations took on the task of developing a universal method of chemical labeling and hazard warnings for the use, transport, and disposal of chemicals. The result is the Globally Harmonized System of Classification and Labeling of Chemicals, or GHS for short. The GHS provides for:

- Harmonized classification criteria for health, physical, and environmental hazards of chemicals.
- Standardized label elements based upon hazard classes and categories.
- A standardized order of information for safety data sheets (SDSs).

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**Those portions of the GHS that a country adopts become mandatory only when the adopting country implements them through its own regulatory process.**

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### GHS basics

The GHS is a voluntary set of “building blocks” which each country can adopt as it sees fit. Those portions of the GHS that a country adopts become mandatory only when the adopting country implements them through its own regulatory process — as OSHA is doing in the U.S.

### The Hazard Communication Standard (HCS)

On November 25, 1983, OSHA published the original Hazard Communication Standard (HCS) requiring chemical manufacturers and importers to evaluate the hazards of the chemicals they produce and distribute.

The original HCS is performance-oriented, allowing chemical manufacturers and importers to convey information on labels and material safety data sheets in whatever format they choose.

### Incorporating GHS

On March 26, 2012, OSHA published a revised HCS, “harmonizing” it with portions of the GHS. The revised HCS changes the existing HCS from a performance-based standard to one that has more structured requirements for the classification of chemical hazards and the labeling of chemical containers.

## Chemical hazard evaluation

Under the revised standard, manufacturers and employers must classify chemicals using the GHS criteria. While the GHS covers physical, health, and environmental hazards, OSHA did not adopt the classification criteria for environmental hazards, as the Agency has no authority over that area.

The revised HCS has specific classification criteria for each health and physical hazard, along with detailed instructions for the evaluation of mixtures. It also establishes both hazard classes and hazard categories — most hazard classes are divided into categories that reflect the relative severity of the effect.

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### OSHA did not adopt the classification criteria for environmental hazards.

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#### Health hazards

OSHA adopted the following categories for classifying health effects:

- Acute toxicity,
- Skin irritation/corrosion,
- Eye irritation/corrosion,
- Respiratory/skin sensitization,
- Carcinogenicity,
- Mutagenicity,
- Reproductive toxicity, and
- Target organ toxicity.

#### Physical hazards

The OSHA categories describing physical hazards include:

- Flammable solids,
- Liquids,
- Gases and aerosols,
- Explosives,
- Pyrophoric liquids and solids,
- Self-heating materials,
- Oxidizing solids,
- Liquids and gases,
- Organic peroxides,
- Self-reactive substances,
- Water reactive, and
- Corrosive to metal.

#### Defined hazards

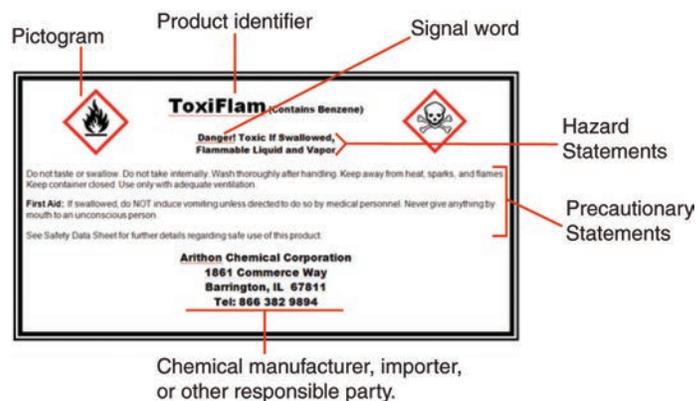
OSHA included pyrophoric gases, simple asphyxiants and combustible dust in the definition of “hazardous chemical,” and provided guidance on how to define combustible dust for the purposes of complying with the HCS.

- **Pyrophoric gases:** OSHA has retained the definition for pyrophoric gases from the old HCS. Pyrophoric gases must be addressed both on container labels and SDSs.
- **Simple asphyxiants:** OSHA has revised the definition of simple asphyxiants in the revised HCS. Simple asphyxiants must be labeled where appropriate, and be addressed on SDSs.
- **Combustible dust:** The definition for combustible dust is being provided through existing documents, including the Combustible Dust National Emphasis Program Directive CPL 03-00-008 and a number of voluntary industry consensus standards (particularly those of the NFPA). Combustible dust hazards must be addressed on labels and SDSs.

#### Container labels

For each of these hazard classes and categories, standardized label information is predetermined, and that information must appear in Section 2 of the safety data sheets. As a result, workers will have consistent hazard and safety information available.

The HCS requires labels to have six elements, four of which have been “harmonized” within the GHS system, based upon the chemical’s hazard class and category.



Those required label elements are:

- Product identifier;
- Signal word;
- Hazard statement(s);
- Pictogram(s);
- Precautionary statement(s); and
- The name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.

### Product identifier

A product identifier refers to how the hazardous chemical is identified. This can be the chemical name, code number, or batch number, or it can be the name as determined by IUPAC, ISO, or CAS. Where a substance or mixture is covered by the UN Model Regulations on the Transport of Dangerous Goods, the UN proper shipping name should also be used on the package.

The product identifier on a GHS label should match the product identifier used on the safety data sheet.

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**Where a substance or mixture is covered by the UN Model Regulations on the Transport of Dangerous Goods, the UN proper shipping name should also be used on the package.**

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### Pictograms

Although the GHS system uses nine pictograms, OSHA has designated eight pictograms under the HCS for application to a hazard category.

OSHA requires pictograms on shipped containers be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be clearly visible.



According to OSHA Brief BR-3636 2/2013, on workplace (or in-plant) labels “pictograms may have a black border, rather than a red border.”

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**On in-house labels only, pictograms may have a black border, rather than a red border.**

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### Signal words

A signal word is used to indicate the relative level of severity of a hazard and alert the reader to a potential hazard. “Danger” is used for the more severe hazards and “Warning” is used for the less severe hazards. Only one signal word, indicating the most severe hazard, will appear on the label no matter how many hazards a chemical may have.

### Hazard statements

A hazard statement is a phrase assigned to a specific hazard class and category that describes the nature of the hazards of a product. Specific hazard statements are assigned to each hazard category and class of the GHS health and physical hazards.

Hazard statements are identified by an alphanumeric code beginning with the letter “H” and followed by three numbers. Examples of hazard statements and their alphanumeric identifiers include “H330 Fatal if inhaled” and “H221 Flammable gas.” The alphanumeric codes will not appear on the label, but may appear on the SDS.

### Precautionary statements

A precautionary statement is a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product. While precautionary statements are optional in the GHS, OSHA is requiring their use.

As with Hazard Statements, each precautionary statement has been assigned a unique alphanumeric code under the GHS. An example is “P362 Take off contaminated clothing and wash before reuse.”

The GHS label should include all appropriate precautionary information.

### Supplier identification

The name, address and telephone number of the manufacturer or supplier of the substance or mixture should be provided on the label.

### Workplace labels

Employers may continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or HMIS requirements for workplace labels. An employer using NFPA or HMIS labeling must, through training, ensure that its employees are fully aware of the hazards of the chemicals used.

The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. "Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

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**If an employer transfers hazardous chemicals from a labeled container to a portable container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container.**

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Even though labels provide important information for anyone who handles, uses, stores, and transports hazardous chemicals, they are limited by design in the amount of information they can provide. Safety Data Sheets (SDSs) are the more complete resource for details regarding hazardous chemicals.

### Safety data sheets

The revised HCS requires that the information on the SDS is presented using consistent headings in a specified sequence. The format of the 16-section SDS should include:

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

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

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The SDS must contain Sections 12 through 15 to be consistent with the GHS, but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

The SDS format is the same as the ANSI standard format which is widely used in the U.S. and is already familiar to many employees.

### Training requirements

HazCom training is required for all "affected" employees, and also provides an opportunity for employers to explain the changes that employees will be seeing over the next few years.

Employees who may be exposed to hazardous chemicals must be provided with information and "effective" training at the beginning of each new assignment involving a hazardous chemical or whenever a new physical or health hazard is first introduced.

Employers are required to inform employees of the following:

- Requirements of the standard;
- Places where hazardous chemicals are present

in the employee's work area;

- The location and availability of the written HazCom program, chemical inventory, and safety data sheets;
- How to access and read safety data sheets;
- How to read the GHS-style container labels (and in-house labeling system, if different); and
- Specific hazardous chemicals in the employee's work area.

OSHA also requires that the training be understood by the employee, which means that training may need to be provided in a language other than English. Employees must also be given the opportunity to ask questions during training and about the chemical hazards they will encounter.

Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

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**OSHA allows employers to train on each individual chemical or train by grouping chemical hazards (such as flammables).**

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Hazardous chemical training must include:

- How to detect the presence or release of hazardous chemicals;
- The physical and health hazards of those chemicals; and
- Precautions employees can take to protect themselves against hazards, such as safe work practices, personal protective equipment, and emergency procedures.

### **Phase-in period**

The revised HCS will be fully implemented in 2016. OSHA has established "phase-in dates" for compliance with the revised standard:

#### **December 1, 2013**

All employers must train affected employees on the new label elements and safety data sheet (SDS) format.

#### **June 1, 2015**

Chemical manufacturers, importers, distributors and employers must be in compliance with all modified provisions of this final rule, except that:

#### **December 1, 2015**

Distributors have an additional six months to ensure that all containers in their supply chain are properly labeled, and:

#### **June 1, 2016**

Employers have an additional six months from that date to update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for any newly identified physical or health hazards.

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**During the transition period chemical manufacturers, importers, distributors and employers may comply with the former standard, the new standard, or both.**

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## About the Author

### Robert A. Ernst

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#### J. J. Keller & Associates, Inc.®

Robert Ernst has been with J.J. Keller and Associates for more than 13 years as an editor in OSHA compliance and workplace safety, and has over 25 years of experience in the field of safety and adult training. Areas of expertise include hazard communication and chemical safety, injury and illness recordkeeping, flammable liquids, first aid/CPR/AEDs, and fire safety, among other safety and compliance topics. In addition to researching and creating content for J. J. Keller products and answering customer questions on a variety of workplace safety topics, Robert presents webcasts for Keller, has written for professional journals and publications, and is a frequent presenter at professional gatherings.

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Since our beginning as a one-man consulting firm in 1953, J. J. Keller has grown to become the most respected name in safety and regulatory compliance. Now over 1,200 associates strong, we serve over 350,000 customers — including 90% of the Fortune 1000. Our subject matter expertise spans nearly 1,500 topics and our diverse solutions include interactive and online training, online management tools, managed services, advisory services, publications, forms and supplies.

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Let us provide you with the most easy-to-understand guidance on OSHA's HazCom with GHS.

Our *Hazard Communication Pro* manual is a comprehensive resource to help you:

- Apply OSHA's new HazCom requirements to your operation
- Develop and maintain chemical inventory
- Conduct employee training
- Create a written program
- Maintain complete compliance
- Audit your HazCom safety

The manual provides GHS-style HazCom label examples, a label chart, SDS request form, and chemical hazards chart.

To learn more about the *Hazard Communication Pro* — or view our entire selection of HazCom solutions, current GHS news, the word-for-word final rule, answers to FAQs, and a free webcast — visit [jjkeller.com/hazcom](http://jjkeller.com/hazcom). Or you can contact us at 800-327-6868.

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