

## **GHS – It’s Coming Sooner than You May Think... Are You Prepared?**

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### **Introduction**

In January, the Occupational Safety and Health Administration (OSHA) announced its regulatory agenda for the year including a date for the publishing of the final rule to revise the Hazard Communication Standard (HCS) (OSHA 2011 Agenda). Set for August 2011, publishing of the final rule is significant because it will mark the formal alignment of HCS with the Globally Harmonized System of Classification and Labeling of Chemicals, or GHS, as it is commonly known around the world.

Even though the Department of Transportation (DOT) has already implemented significant components of GHS into its standards, bringing HCS into alignment with GHS is the zenith of a many decades endeavor by OSHA and other U.S. agencies including the DOT, Environmental Protection Agency (EPA) and Consumer Product Safety Commission (CPSC), to develop the global system and advocate for its adoption (EPA 2011).

Impact on U.S. companies from OSHA’s adoption of GHS should be mitigated thanks to the agency’s leadership in the actual development of the global system and because HCS is one of four major international chemical hazard communication systems upon which the global system is modeled (OSHA 2006)

Nevertheless, adoption of GHS will produce several significant changes that establishments covered under HCS (OSHA standard 29 CFR 1910.1200) will need to contend with in order to stay compliant. Those changes are the purview of this paper.

### **Background on HCS**

To understand the changes that alignment with GHS will bring, we first need to understand HCS in its current form. The Hazard Communication Standard is officially known as 29 CFR 1910.1200, but is commonly referred to by many names, including: HCS, HazCom, 1910.1200, and simply The Reg.

First adopted in 1983 for the manufacturing industry, HCS was expanded in 1987 to cover all industries. Currently the regulation covers 40 million workers in over 5 million

workplaces (OSHA 2009 Proposed Rule). Its purpose is “to ensure that the hazards of all chemicals produced or imported are evaluated and details regarding their hazards are transmitted to employers and employees.” (OSHA 1994)

Chemicals covered under HCS are those that pose physical hazards, such as combustible liquids or explosives, and those that pose health hazards, such as carcinogens and hepatotoxins (which can cause liver damage). OSHA estimates that there are over 880,000 hazardous chemicals covered under HCS, and they exist in varying states, with varying properties (OSHA 2009 Proposed Rule). They may be stored in anything from drums to tanks to spray bottles. Some are commonly known to be hazardous, like hydrochloric acid, while others may be less obvious, like Windex.

If you are a chemical manufacturer, chemical importer and distributor or an employer who uses chemicals, you probably have at least some responsibilities under HCS. The term “use” means to ‘package, handle, react, emit, extract, generate as byproduct or transfer’ (OSHA 1994).

Chemical manufacturers need to evaluate the chemicals and any components of chemical products they produce to identify potential hazards, and then must create and distribute appropriate warning labels and material safety data sheets (MSDSs) along with any chemicals they ship to importers, distributors or end users. Similarly, importers and distributors must supply labels and SDSs along with any hazardous chemicals they ship to end users. Under GHS alignment, MSDSs are referred to simply as safety data sheets or SDSs. Going forward, this paper will also adopt the acronym SDS.

End users and employers must maintain an inventory of the hazardous chemicals they use, prepare and implement a written hazard communication program, ensure that all on-site containers are properly labeled, obtain and provide employee access to SDSs for all hazardous chemicals, and train employees about how to handle the chemicals and how to read SDSs and warning labels (OSHA 1994).

It is worth repeating, under HCS, employer responsibilities consist of five key components: 1) the written plan; 2) written chemical inventories; 3) labels and warnings; 4) training; and 5) SDS management (OSHA 2000). After GHS alignment, these four components will remain the key to compliance with HCS (OSHA 2009 Proposed Rule).

## **The Problem**

Looking at the synopsis above, HCS may seem straightforward; nevertheless, as it is written, there is room for much variance in the way chemical manufacturers classify chemicals, and the language they use to convey hazards via labels and SDSs. This means end users and employers must contend with labels and documents that come in a variety of formats and with a variety of hazard descriptions – even for chemical products that are identical in every way.

Add to that, the global nature of chemical commerce and the fact that many countries have their own chemical hazard communication standards, with unique formatting and nuances in language, and you can see how the transport of chemicals between nations and the transmittal of hazard communication downstream from manufacturer to end user can contribute to unsafe or even dangerous workplaces.

Furthermore, companies involved in international commerce have additional financial and regulatory burdens related to the duplication of hazard communication materials to meet the unique standards of the various countries in which they do business. It all adds up to greater risk, confusion and health hazards for employees around the world.

This is how OSHA answers the question of why it wants to modify HCS on its Web page, Facts on Aligning the Hazard Communication Standard to GHS:

[It] will help ensure improved quality and more consistency in the classification and labeling of all chemicals. This will enhance worker comprehension, resulting in appropriate handling and use of chemicals. The harmonized format of the safety data sheets will enable workers to access the information more efficiently. In addition, currently multiple labels and safety data sheets must often be developed for the same product when shipped to different countries. This creates a major compliance burden for chemical manufacturers and those involved in international trade, increasing the cost of providing hazard information. The adoption of GHS will minimize this burden. (OSHA 2009 Facts)

## **History of GHS**

Harmonizing the classification of hazards and the communication of those hazards downstream through labels, SDSs and training has long been a goal of the United States and the United Nations. In fact, written into the 1983 preamble of the final rule of the first HCS was a directive for OSHA to work toward an international standard (OSHA 2009 Proposed Rule).

Nine years later, in 1992, at the United Nations Conference on Environment and Development (UNCED), the United Nations called for the development of a globally harmonized system for classifying and labeling chemicals, saying, “A globally harmonized hazard classification and compatible labeling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000” (OSHA 2009 Proposed Rule).

In short, the goal was to create a common and coherent global approach to definitions, hazard classifications of chemicals, and a consistent communication approach to labels and SDSs. A United Nations directed group of stakeholders began working on what became known as GHS, and the United States took a proactive role in the process. As mentioned earlier, OSHA was the lead U.S. agency for chemical classification and hazard communication in a group that included the DOT, EPA, and CPSC.

In 2003, the first edition of GHS was published by the United Nations and countries were encouraged to adopt the system by 2008. Presently, 67 countries have adopted, or are in the process of adopting, GHS. OSHA is basing its alignment with GHS on the United Nations’ 3<sup>rd</sup> revision (UNECE 2011).

## **What is GHS?**

Let us start by saying what GHS is not. It is not a regulation or a standard that can be simply adopted. Rather, it provides criteria, provisions and explanatory text that can be used as guidance for countries as they align their regulations with GHS. In other words, each country or regulatory authority is permitted to select those parts of GHS that apply to their regulations and to

implement GHS in a way that's most consistent with their own specific requirements. This is called the building block approach (OSHA 2009 Proposed Rule).

What that means for HCS is that the overall framework for the regulation will remain the same, and those specific provisions not affected by GHS will remain unchanged. For example GHS does not include training, but HCS does, and will continue to do so. It is one of the central tenets of GHS – to not weaken or diminish the protections of the systems that align to it (OSHA 2006 Guide).

Furthermore, GHS is not a global law enforced by an international body, as some have feared. Each country that adopts components of GHS is also responsible for its enforcement. In the United States, that means OSHA will enforce those components of GHS related to chemical classification and hazard communication, DOT will enforce GHS components related to transportation, and that the EPA will enforce GHS components related to the environment when its expected adoption of the global guidelines occurs.

From the above, we can see that GHS is an approach, not a mandate, adaptable by country.

## **OSHA Alignment with GHS**

As mentioned at the beginning of this paper, OSHA has targeted August 2011 for the publishing of a final rule to revise HCS to align it with GHS. At that time, OSHA will announce the effective date for the final rule. Employers will have to train all employees on GHS (reading labels and SDS's, etc.) within two years of the publishing of the final rule and will have to be in full compliance within three years (OSHA 2011).

Training has an accelerated timeline because it is anticipated that there will be some early adopters, and workplaces could start seeing GHS compliant labels and SDSs well before the three year mark and OSHA wants to ensure employee safety during the transition. OSHA also understands that during the transition, some employers will be following the old HCS and some the revised HCS; to that end, the agency will enforce compliance, but will accept adherence to either standard so long as the company in question is compliant with the old or the new HCS.

Again, after the transition, the overall protections outlined in HCS will not be reduced; rather, OSHA is making the standard more comprehensive and only modifying those provisions of HCS that must be changed to align with GHS.

The basic framework of responsibility we discussed earlier for HCS will remain the same:

1. Chemical manufacturers will continue to be responsible for classifying chemicals and providing information about the identities and hazards of the chemicals they produce or import
2. Importers and distributors will continue to be responsible for providing information about the identities and hazards of the chemicals they import and sell

3. All employers with chemicals in their workplaces will continue to be responsible to have a hazard communication program and to provide information to their employees about chemical hazards and protective measures (OSHA 2009 Proposed Rule).

Other aspects of the standard have minimal modifications in terminology to make them consistent with GHS. The scope and application of HCS are basically unchanged. And the written program requirements, worker training and trade secret provisions are all largely unchanged from the existing rule.

You will also see that the bulk of technical requirements are contained in the appendices, versus the regulatory text, which is in the main body of the standard. Furthermore, the appendices largely apply only to chemical producers in that they provide specific guidance on classifying chemicals. The appendices are organized as follows (OSHA 2009 GHS).

- Appendix A: Health Hazard Criteria
- Appendix B: Physical Hazard Criteria
- Appendix C: Allocation of Label Elements
- Appendix D: Safety Data Sheets
- Appendix E: Definition of “Trade Secret”
- Appendix F: Guidance for Hazard Classification Regarding Carcinogenicity

## Two Most Prevalent Changes

The two most prevalent changes to HCS are to the hazard classification criteria and hazard communication. Regarding hazard classification, the proposed modifications introduce the concept of severity of response in the criteria.

Essentially, GHS Hazard Definitions are criteria-based and each type of hazard covered is considered a “hazard class”– such as acute toxicity and carcinogenicity – and most of these hazard classes are also subdivided into “hazard categories” to reflect the degree of severity of the effect.

This is the concept of “classification”– rather than just determining that there is a hazardous effect (carcinogenicity), there is also the task of finding out how severe that effect might be (Category 1 or 2). Here are some examples of differences between HCS and GHS hazard classification lists (OSHA 2009 Proposed Rule):

1. Under Health Hazards: Carcinogenicity
  - In HCS, Carcinogenicity has just 1 classification. A chemical is a “Carcinogen” if it meets certain criteria
  - In GHS, Carcinogenicity has 2 categories and subcategories -- “Category 1A and 1B – Known or Presumed Human Carcinogen” (Known is 1A and Presumed is 1B) and “Category 2 – Suspected Human Carcinogen”
  - There is no exact match for GHS “Germ Cell Mutagenicity” in the current HCS
2. Under Physical Hazards: “Gases Under Pressure”
  - HCS has 1 Category for Gases Under Pressure

- GHS has 4 Gases Under Pressure Categories: Compressed Gases, Liquefied Gases, Refrigerated Gases, Dissolved Gases

An important note, GHS actually breaks hazards down into three classes, 1) health hazards; 2) physical hazards; and 3) environmental hazards – however, since environmental issues are outside of OSHA’s regulatory domain, it will not be adopting the environmental hazard class. The environmental class will come under the stewardship of the EPA when it aligns its standards with GHS (OSHA 2009 Proposed Rule).

## Hazard Communication

The second key area of change to HCS is to the hazard communication elements, specifically labels and SDSs. And it is changes to these portions of HCS that will affect the majority of business covered under HCS, i.e. employers.

To start, labeling for shipped containers is one of the key areas of harmonization. Currently, HCS has a simple, performance-oriented approach to labels. But, in order to achieve a harmonized approach, GHS has detailed and specific provisions for labels. Which is why, for alignment purposes, language around labeling in HCS has been re-written to reflect GHS requirements (OSHA 2009 Proposed Rule).

A new Appendix C (Allocation of Label Elements) has been implemented to indicate the label requirements by hazard class and category. With GHS, each container of a classified hazardous chemical is to be labeled, tagged, or marked with the following elements (OSHA 2009):

1. The Product or chemical identifier must be clearly indicated at the top of the label. It should match the SDS.
2. The contact information for the product supplier must be clearly indicated at the bottom of the label and must include the company name, address and telephone number.
3. Hazard Pictograms. For transport, pictograms will have the same background and symbol colors currently used. For all other sectors, pictograms will have a black symbol on a white background with a red diamond frame. Keep in mind, where a transport pictogram appears, GHS pictogram for the same hazard should not appear. That’s a far simpler system compared to the current 38 shapes, colors and symbols being used in just North America today.

Note: GHS allows for a black frame to be used for shipments within a single country. OSHA, however, is proposing that a red frame be used regardless of whether the shipment is traveling inside or outside the country.

4. Next, is the signal word, which should be clearly marked at the top of the label beneath the product identifier. GHS permits the use of only two signal words (and only one at a time), DANGER or WARNING, to emphasize the hazard and distinguish between levels of hazard.
5. Under the signal word, a hazard statement should appear that describes the level of hazard.

Signal words, hazard statements and pictograms have all been harmonized, and assigned to each hazard class and category in GHS. Once a chemical has been classified, the relevant harmonized information can be found in HCS under the new Appendix C.

6. Lastly, the label should include the appropriate precautionary information. Since OSHA does not currently require precautionary statements, this is a key change to HCS. GHS documentation includes examples of precautionary statements, but as of now, this section of GHS is not harmonized. The intent is to harmonize precautionary statements in the future, and until that time, OSHA has proposed mandating the use of the GHS examples, which it anticipates will end up being the harmonized statements.

Keep in mind these requirements are for Classified Hazards. For unclassified hazards, the shipping label should include the product name, supplier contact information, and as supplemental information, a description of the hazards and appropriate precautionary measures.

## **Workplace Labeling**

GHS allows authorities like OSHA to determine what types of workplace labels will be required. OSHA says it will continue to give employers some flexibility in this area by allowing them to choose “to label workplace containers either with the same label that would be on shipped containers for the chemical under the revised rule, or with label alternatives that meet the requirements for the standard” (OSHA 2009 Proposed Rule). However, these systems will have to be updated to make sure the information is consistent with the new classifications.

OSHA will also continue to give employers alternatives to affixing labels to stationary containers and portable containers used to transfer materials from labeled containers, so long as the portable containers remain under the control of the employee who performs the transfer and are used within a work shift. An example would be a scoop used to transfer chemicals from one labeled container to a second labeled container. So long as the scoop was used only by the worker performing the transfer, and only during the work shift, the scoop would not necessarily need a label.

One notable change employers should be aware of relates to the use of numbers to designate the categories of hazard classes. With GHS alignment, the most dangerous hazards are assigned Category 1, and the scale is ordered from more serious to less serious. Whereas, under the current HCS, the higher the number the greater the danger. However, OSHA is not seriously concerned about this change since the numbers will only appear on the SDS and will be accompanied by information that clearly denotes the hazard (OSHA 2009 Proposed Rule).

Not changing, are the requirements that labels be presented in English – though additional languages are permitted as needed – and that labels must not be defaced or removed unless new labels are immediately replaced.

## **Safety Data Sheets**

Remember MSDSs are redefined as SDSs under GHS, as was mentioned at the beginning of this paper. They are the backbone of employee safety programs, as well as chemical inventory management systems as they provide employers and workers with comprehensive information

about a chemical substance or mixture. OSHA recognizes their primacy to understanding chemical hazards, which is why it pays much attention to the acquisition and management of SDSs and employee access to them in the workplace.

The alignment will continue to keep SDSs at the forefront of HCS and make the format and quality of information more consistent. SDSs will be broken into a 16 section format with a required ordering of sections. It is essentially the ANSI Standard for SDSs, with a few minor tweaks. The sections, in order, are as follows (OSHA 2009):

1. Identification
2. Hazard(s) Identification
3. Composition/Ingredient Information
4. First-Aid Measures
5. Fire-Fighting Measures
6. Accidental Release Measures
7. Handling and Storage
8. Exposure Control/Personal Protection
9. Physical & Chemical Properties
10. Stability & Reactivity
11. Toxicological Information
12. Ecological Information
13. Disposal Considerations
14. Transport Information
15. Regulatory Information
16. Other Information

One caveat to the SDS sections, OSHA will not be enforcing sections 12-15. To be GHS compliant, an SDS needs all 16 sections. For OSHA, however, sections 12-15 are outside their jurisdiction from an HCS perspective and employers need not worry about the information in those fields (OSHA 2009 Proposed Rule).

Section 2 also has key changes. It will contain a reclassification of hazards based on GHS criteria as well as pictograms, signal words, hazard statements and precautionary statements. This information was placed near the top specifically to aid workers and emergency personnel in the case of an emergency.

Some businesses will be pleased to note that SDSs will continue to allow provisions for confidential business information (CBI), or trade secrets as they are known in HCS. The provisions for trade secret protection should not compromise the health and safety of users and claims should be limited to the names of chemicals and their concentrations in mixtures. Furthermore, mechanisms should be established for disclosure in emergency and non-emergency situations

For detailed information about what is to be included in each section, interested parties should consult the new Appendix D.

## **Training**

Only one change is being proposed to the training provisions to clarify what must be included in the training. The proposed change would require training on the details of the hazard communication program developed by the employer, which must include an explanation of the labels received on shipped containers and an explanation of the workplace labeling system used by the employer. In addition, training must be provided on the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information (OSHA 2009 Proposed Rule).

Under OSHA's HCS revision, training is compulsory, which differs from GHS. And as was mentioned earlier, training must be completed within two years of the publishing of the final rule.

## **How Employers Can Prepare**

Because chemical manufacturers are responsible for much of the work that needs to be done in order to make the entire system GHS compliant, many (if not most) have already begun the work of transitioning to the new standard. Many employers on the other hand have only a vague notion of what it is coming and how to prepare. For that reason, we will focus on the steps employers can take to make the transition to a revised HCS a smooth one.

- Have an HCS plan and maintain a checklist of key plan components and review it annually
- Inventory your on-site chemicals
- Make sure you have a complete library of SDSs
- Stay current with OSHA on the federal, state & local levels
- Keep an eye on GHS key dates and how they impact on your plan
- Prepare yourself for the eventual SDS churn, keeping your archiving needs a priority
- If you're still using paper, consider transitioning to electronic system
- Make sure your secondary labeling system is GHS compliant
- Start developing a training plan for your employees

## Conclusion

With the revision of HCS to align with GHS, the United States and other countries, international organizations, chemical producers and employers will all benefit; yet, at the end of the day, what really matters is the health and safety of the hundreds of millions of workers who are exposed to hazardous chemicals every day.

Alignment with GHS will bring change and all of the headaches that change entails. Alignment will also enhance protection of humans and the environment, facilitate international chemical trade, reduce the need for testing & evaluation of chemicals (particularly animal testing) and, with everyone's participation, ensure the sound management of chemicals.

GHS is coming. Are you prepared?

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