Executive Summary
Every year, hazard communication ranks as one of the most commonly cited OSHA standards during inspections. To protect workers and prevent costly OSHA fines, your business must prepare for a shift to new hazard classification criteria, labels, and Safety Data Sheets.
The GHS HazCom Transition—Five “Must-Know” Changes

OSHA’s HazCom Standard (HCS) underwent changes in March 2012 when OSHA adopted classification, hazard labeling, and Safety Data Sheet requirements from the Globally Harmonized System of Classifying and Labeling Chemicals (GHS). GHS is a systematic approach to identifying and classifying chemical hazards in the workplace and communicating those hazards to employees with labels and Safety Data Sheets (SDSs). The goal of OSHA’s GHS adoption is to harmonize US standards with international workplace hazard communication requirements.

The adoption of the GHS standard does not change the overall intent of OSHA’s HazCom Standard: to protect employees from the hazardous chemicals they could come in contact with in the workplace. However, GHS will bring some changes to US facilities’ HazCom programs that may affect compliance. Here you will find the top five HazCom changes safety professionals should know.
Newly Added “Extra” OSHA Classifications

With the adoption of GHS, OSHA’s HazCom Standard now includes a long list of physical and health hazards that are regulated. This includes physical hazards like flammable liquids and explosives and health hazards like carcinogens and reproductive toxins.

In addition to new GHS hazards, OSHA decided to add some of its own hazards to HazCom that the Agency felt should be regulated. The following are some OSHA “extras”:

- Simple asphyxiants – By definition, these are “substances or mixtures that displace oxygen in the ambient atmosphere and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.” In general terms, these chemicals basically suffocate employees because they do not allow the person to breath in any oxygen. For instance, something like dry ice that gives off carbon dioxide vapors could be a potential asphyxiant since carbon dioxide displaces oxygen when in confined spaces. [29 CFR 1910.1200(c)]

- Pyrophoric gases – These are defined as gases “that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.” These types of chemicals would have to be in containers that are leaktight so as to not allow any type of air to enter. OSHA added pyrophoric gases since GHS already regulates pyrophoric solids and liquids. [29 CFR 1910.1200(c)]

- Combustible dust – One of the more contested hazards from industry was OSHA’s addition of combustible dusts into HazCom. These are chemicals in dust form that present a hazard when used. Essentially, these chemicals create floating dust particles that can create an explosive or highly flammable atmosphere. Chemicals can also be combustible dusts, even if they are in a form that is not yet dust, but under normal conditions of use are processed in a way that presents a combustible dust hazard. So something like a saw mill that has planks of wood sitting around could have a potential dust hazard if, in the future, the processing of the planks might generate copious amounts of dust. [29 CFR 1910.1200, Appendix C.4.30, Note 2]
Bonus “Must-Know” — Hazards Not Otherwise Classified (HNOCs)

Even if your material does not meet any of the GHS hazards or OSHA “extras,” you might still have a regulated chemical. According to OSHA, “hazard not otherwise classified means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section.”

In a nutshell, OSHA says that if you think there is something hazardous that should be addressed outside of the typical OSHA hazards, you still need to regulate that chemical. OSHA’s reasoning is that employees have the right to be protected from all hazards, even those not specifically defined. [29 CFR 1910.1200(c)]

Since this is a new hazard, there are no clear-cut examples yet. However, this might include something like an epoxy that consists of two chemicals. Those two chemicals alone might not be hazardous, but their resulting mixture might be. As such, the employee would need to be made aware of this hazard.
New Standardized GHS Labels

As mentioned earlier, OSHA now requires GHS-type labels for most hazardous chemicals. GHS labels must be placed on all shipped containers containing hazardous chemicals. [29 CFR 1910.1200(f)(6)] Thus, workplace containers that will never be transported can technically use other types of labeling, as long as they meet some basic conditions. As a best practice, it may be helpful to use GHS-type labels on everything (even when not required). A single labeling system will prevent confusion among workers.

GHS labels are relatively straightforward, provided that you know where to find the information to create them. At a minimum, GHS-type labels must have:

- A product identifier as used on the SDS (typically, this will just be the chemical name)
- The name, address, and telephone number of the chemical manufacturer, importer, or other responsible party
- A signal word
- Pictograms
- Hazard statements
- Precautionary statements [29 CFR 1910.1200(f)(1)]

The first two elements listed above are fairly straightforward. The other four can be found at 29 CFR 1910.1200, Appendix C. To be able to use this appendix, you first need to know what hazards your chemical poses. Once you know that, much of the label creation is just plugging in what Appendix C tells you to write.

Employers who create their own labels should be aware of other specific standards. For instance, labels are not allowed to have blank pictogram diamonds, among other things. [29 CFR 1910.1200, Appendix C.2.3] If you are in charge of label creation, you may need to complete training to guide you in the process. Here is an example of a finished GHS label:
GHS Severity of Hazards vs. NFPA and HMIS Systems

As explained above, all workplace chemicals must be classified to determine the hazards they pose. Once the hazards are known, the chemical can be assigned to a "hazard class," such as flammable liquid or carcinogenicity. Within each hazard class, chemicals are further classified into "hazard categories." The category is an indication of how severe that hazard is.

Under the GHS system, lower-numbered hazard categories are more dangerous than higher-numbered categories. For example, flammable liquids have four hazard categories based on their flash point and boiling point levels. Hazard Category 1 is for the most dangerous types of flammable liquids; these liquids have very low flash and boiling points, making them easy to ignite. Hazard Category 4 is for the least dangerous flammable liquids, those that have higher flash and boiling points. [29 CFR 1910.1200, Appendix B.6.2] Many companies have been using the NFPA (National Fire Protection Association) and HMIS (Hazardous Materials Identification System) categorization systems for years to signify severity of hazard. GHS poses a unique problem—those systems are "reverse" of GHS classification. Under NFPA and HMIS standards, severity of hazard was based on a four-point system. Higher numbers (with four being the highest) meant a chemical was more dangerous, while lower numbers meant less dangerous. This can obviously lead to confusion when transferring from NFPA or HMIS to GHS.

In the past, using NFPA and HMIS labels to fulfill the hazardous chemical labeling requirements was perfectly acceptable. While these NFPA and HMIS labels are not acceptable for shipped containers (which must display a new GHS label), OSHA has stated these labels can still be used for workplace containers. Per OSHA’s guidance, however, it may not be a great idea.

OSHA elaborates more on this on its GHS FAQ page:

"Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Identification System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised HCS, e.g., no conflicting hazard warnings or pictograms." When used alone, there is a good chance that NFPA and HMIS labels will still require additional information to meet OSHA’s requirements.
Overlap of DOT and OSHA Communications

The Department of Transportation (DOT) regulates “hazardous materials” when they are in transportation. As may be expected, many OSHA-regulated hazardous chemicals are also regulated as DOT hazardous materials. When an OSHA hazardous chemical is shipped under US DOT rules, the shipper must use both OSHA labeling and DOT marks and labels. In some cases, both OSHA and DOT communications may be required on the same receptacle. OSHA requires labeling on all “containers.” DOT requires marks and labels on all “packages.” There is a slight difference in how the two agencies define these terms, based on the agencies’ regulatory responsibilities and goals.

OSHA works to protect employees in the workplace. As such, all OSHA communications must be on the container that employees will come into direct contact with. DOT, on the other hand, works to protect employees from materials in transit. So, the entire package—which could include inner receptacles as well as the outer packaging—must be safe for transport.

For instance, if a shipper offers for transport a fiberboard box with glass bottles on the inside, the DOT “package” would be the bottles and box together. The OSHA “containers” would be only the glass bottles. Thus, DOT communication would go onto the box and OSHA labeling would go on the bottles.

If in a different instance, shippers might offer a steel drum for off-site shipment. In this case, the steel drum is both the shipping package and the workplace container that employees will come in contact with. So the drum is both a DOT “package” and an OSHA “container.” For these types of shipments, the drum must display both DOT and OSHA communication.

Another issue to consider is that not all OSHA hazardous chemicals are DOT hazardous materials. Employees must understand this, especially because an employee may automatically assume a chemical is regulated by DOT, if he or she sees a GHS label on a container. That is not necessarily the case, so extra attention or instruction may be needed in these cases.

Lastly, in the past, shippers may have used DOT markings, labels, or placards to satisfy OSHA’s HazCom requirement on certain containers. This is no longer acceptable. All shipped containers now need GHS labels. For instance, an intermediate bulk container, often referred to as a “tote,” that is sitting on the property may have previously had a large placard on its outside to fulfill OSHA’s communication requirements. With GHS adopted, the DOT placard no longer provides enough information to meet the OSHA standard. If it’s on the property and will be shipped eventually, it also needs GHS labeling.
New Safety Data Sheet Format

The revised Safety Data Sheet (SDS) system is a big challenge for manufacturers and employers. Previously called Material Safety Data Sheets (MSDSs), SDSs must now follow a specific, 16-section format. The good news is that the information required on SDSs is fairly easy to find at 29 CFR 1910.1200, Appendix D. This Appendix lists all 16 sections in order and specifies what kinds of information must go into each section.

For instance, Section 9 is for “physical and chemical properties.” Information required in this SDS section includes, but is not limited to, appearance (physical state, color, etc.), odor, pH, flash point, vapor pressure, and viscosity.

Not all 16 sections of the SDS are mandatory. OSHA regulates only 12 of these sections. The remaining 4 sections are beyond the scope of OSHA. The 4 “optional” sections subject to different US agency standards are:

- Section 12 “Ecological information”: mostly subject to Environmental Protection Agency (EPA) rules
- Section 13 “Disposal considerations”: also mostly subject to EPA rules
- Section 14 “Transportation information”: subject to DOT jurisdiction
- Section 15 “Regulatory information”: could have any number of other outside agencies’ information

While the intention of GHS adoption is to harmonize with the rest of the world, it is important to note that other countries may require you to fill out the “optional” sections when shipping to them.

As manufacturers create new SDSs, they will send completed copies to purchasers of their chemicals. That means that employers should be expecting an influx of SDSs and may want to invest some time or money into how they are going to keep track of those SDSs. As mentioned above, it may be in the interest of the employer to again train employees on how to utilize these SDSs in emergencies.
OSHA HazCom and DOT Hazmat Safety Training

These chemical safety online courses are designed to meet OSHA hazard communication (HazCom) training requirements at 29 CFR 1900.1200(h) and DOT hazmat safety training required for all “hazmat employees” at 49 CFR 172.704(a)(3).

HAZCOM: FLAMMABLES AND COMBUSTIBLES
Run time: 40 minutes. This online flammables and combustibles safety course guides employees through the process of identifying flammable and combustible chemicals. Employees learn the keys to hazard control, safety chemical storage, fire prevention, and emergency response.

HAZCOM: CORROSIVES
Run time: 35 minutes. Employees learn to identify and protect themselves from hazards of corrosives chemicals in the workplace, as required under OSHA and DOT rules. This course covers hazard recognition and control, safe storage of corrosives, fire prevention, and emergency response for corrosive chemicals.

HAZCOM: POISONS/TOXIC SUBSTANCES
Run time: 35 minutes. Meet DOT and OSHA safety training requirements for personnel who handle, package, ship, or may be exposed to poisons or toxic substances on the job. Employees learn what they need to know to recognize and protect themselves from poisons and toxic substances in your workplace.

HAZCOM: COMPRESSED GASES
Run time: 35 minutes. Employees learn a simple process to identify compressed gas hazards from Safety Data Sheets, GHS labels, markings, and more. Employees learn critical elements of safe handling and storage for compressed gases.

The five “must-knows” listed here are not a complete summary of everything required under GHS implementation. They are simply meant to help employers prepare for contingencies they may not have considered.

Knowing what’s changed is a critical first step toward compliance. Don’t wait until the last second to get your site up-to-date; it will be too late by then. In the long run, GHS should make hazard communication easier globally. Once US employers and manufacturers can get over this hump, we will be closer to global harmonization, even if not perfectly matched with other countries’ programs.