The Most Recent Revision to OSHA's HazCom Standard Has Far-Reaching Effects

Hazards are ever-present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, coordinated by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.

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Comments are welcome. If you have questions about this topic or other safety issues, please contact safetyfirst@aist.org. Please include your full name, company name, mailing address and email in all correspondence.

The Occupational Safety and Health Administration (OSHA) has cited manufacturers more often for alleged violations of its 1986 Hazard Communication Standard, 29 C.F.R. §1910.1200 (HCS), than just about any other of its safety or health standards. In 2011, in fact, the HCS was again the most frequently cited standard in general industry. With OSHA adopting the United Nations Global Harmonization System (GHS), this will only get worse.

OSHA has drastically changed its HCS, which has been in effect for nearly 30 years. It did so to embrace the GHS. This amended standard, published 26 March 2012, means that virtually all the labels and Material Safety Data Sheets (MSDS) prepared over those three decades need to be revised by 1 June 2015. The largest challenge will be to re-evaluate the hazards of every hazardous chemical using a rigorous classification scheme. To some in the chemical industry, this is just a precursor to the adoption of the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) standards within the United States. In fact, in March 2012, the U.S. Environmental Protection Agency (EPA) requested that all manufacturers submit to the EPA copies of their REACH dossiers, which, by European regulation, must contain a Safety Data Sheet (SDS) — a GHS-driven document which will replace the HCS MSDS.

History of OSHA's Hazard Communication System

OSHA adopted the Hazard Communication Standard in 1983. This standard, innovative at the time, left manufacturers some room for scientific judgment in identifying and characterizing hazards on labels and Material Safety Data Sheets.

This new standard applied to any hazardous substance or mixture except for hazardous waste. A single valid study showing an effect would require a warning, at least on the MSDS. It identified minimum standards that must appear on a label and MSDS, but this was a performance-based provision that did not limit what a chemical manufacturer preparing them must say about those elements.

Although OSHA has broadened the scope of the HCS, aspects of it have changed while still retaining its original structure. The fundamental concept has not changed in the new rule; it is still meant to have manufacturers, who select the chemicals that go into a product and presumably know the most about the hazards of their chemicals, identify those hazards using available information. Importers and distributors are the first link in the supply chain for imported chemicals and are still subject to OSHA's jurisdiction. Chemical manufacturers must summarize these hazards and provide precautionary information on product labels and MSDSs. While chemical identities can be trade secrets and may be withheld, the hazards and/or precautionary

information cannot be omitted because of any trade secret status. The focus of this regulation is on hazard, not risk, the basis of which is that upstream users may not know about the exposure to the downstream users of the chemicals. Distributors are thus required to pass on labels and MSDSs to their customers. Users of chemicals are responsible for informing their employees about the hazards and ensuring that their employees are trained on how to protect themselves from injury or illness. Employers also have to label most intermediate containers of chemicals present in the workplace.

When OSHA adopted this plan, it was acknowledged that there would have been advantages in a standardized system for chemicals moving in international trade, had one been available. In 1992, the United Nations Conference on Environment and Development issued a directive to its members calling for development by 2000 of "a globally harmonized hazard classification and compatible labeling system, including Material Safety Data Sheets and easily understandable symbols."

Hazard Classification

The original HCS required chemical manufacturers and importers to evaluate their chemicals for hazards, to prepare MSDSs that include hazard and related information on those chemicals that are hazardous, and to label containers of those chemicals in order to communicate the chemicals' hazards to downstream users. Employers who are downstream users then must implement written hazard communication programs (HCPs) that include, among other things, chemical inventory lists, copies of MSDSs received from the chemical manufacturers/importers and distributors, provision for employee training, and procedures for dealing with contractors who bring employees or chemicals of their own on the worksite.

Chemical manufacturers still have the responsibility to identify the hazards of the chemicals in their products. Unlike the European Union's (EU) REACH legislation, OSHA did not adopt the procedure where a government agency like the European Chemical Agency (ECHA) classifies the hazards of many individual chemicals. In 2010, Congressman Henry Waxman, along with Congressman Bobby Rush, introduced H.R. 5820, The Toxic Chemical Safety Act, which would drastically change the Toxic Substance Control Act to require manufacturers to prove the safety of their products to government regulators before they can be placed in the marketplace, similar to the REACH legislation and the EU's Classification, Labeling and Packaging (CLP) rules.

The original HCS allows chemical manufacturers and importers flexibility in the way they communicate hazard information on MSDSs and labels. The revised HCS, by contrast, applies strict hazard classification, labeling and SDS formatting requirements to help ensure uniformity. Under the new rule, every hazardous chemical will have to be assigned to one or more of several specific physical or health hazard "classes" and, potentially, one or more hazard "categories" within the hazard class that describes the nature of the physical health hazard posed by the chemical — for example, explosive, flammable solid (or liquid), irritant, corrosive, carcinogen, and the like.

Individual chemicals must be classified as to their physical and health hazards. To "classify" means "to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition, classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards." Degrees of hazard are indicated by assignment to various hazard categories within a hazard class (e.g., a Category 3 acute oral toxicity hazard).

The 10 health hazard classes for which the HCS provides classification criteria are acute toxicity, skin corrosion/irritation, serious eye damage/eye irritation, respiratory or skin sensitization, germ cell mutagenicity, carcinogenicity, reproductive toxicity, specific target organ toxicity from a single exposure and from repeated or prolonged exposure, and aspiration hazard. The 16 physical hazard classes with classification criteria are explosives, flammable gases, flammable aerosols, oxidizing gases, gases under pressure, flammable liquids and solids, self-reactive chemicals, pyrophoric liquids and solids, self-heating chemicals, chemicals which emit flammable gases in contact with water, oxidizing liquids and solids, organic peroxides, and chemicals corrosive to metals.

Determining the degree of hazard is now part of the hazard classification process. Formerly, a chemical either did or did not have a particular hazard. Now, hazards are categorized by degree of hazard. For example, there are four categories of acutely toxic chemicals, with Category 1 being the most toxic and Category 4 the least. Carcinogens are to be classified as either Category 1 (known or presumed human carcinogen) or Category 2 (suspected human carcinogens). Where there is enough evidence, Category 1 carcinogens are to be classified as either Category 1A (known to have carcinogenic potential for humans, based largely on human data) or Category 1B (presumed to

have carcinogenic potential for humans, based largely on animal data).

Labeling Under OSHA's New GHS Standard

In the past, a label had to include the identity of the hazardous chemical with the appropriate hazard warnings and the name and address of a responsible party. Now the label must include the product identifier, a signal word, standardized hazard statements, one or more pictograms, standardized precautionary statements, and the name, address and telephone number of a responsible party. The selection of the specific label elements for a chemical depends on the classification of the chemical.

As before, the label must include the name of the chemical (which may be the product name). GHS also calls for disclosure of all ingredients that contribute to any of several health hazards or, at the choice of the national authority, disclosure of all ingredients. For workplace chemicals (those within OSHA's jurisdiction), GHS allows OSHA to give suppliers discretion to disclose ingredient identities only on the SDS. OSHA has chosen not to require ingredient identities to appear on labels.

Hazardous chemical labels will have to include standard elements: (1) a signal word, either "Danger" or "Warning"; (2) a hazard statement that describes the nature of the danger posed by the chemical; (3) one or more of eight different standardized symbols or pictograms that communicate the nature of the hazard; and (4) a description of measures that are manufacturer-recommended for the prevention or minimization of the adverse effects of exposure.

The revised HCS, consistent with the GHS, also prescribes a particular format for SDSs, which are called MSDSs under the original HCS. All SDSs will have to be formatted into 12 of the 16 sections prescribed by the GHS, in a particular order, first communicating the information most generally needed by a chemical user or an emergency responder and only later more specific or technical information. The order is:

1. Identification of the substance or mixture and of the supplier.
2. Hazards identification.
3. Composition/information on ingredients substance/mixture.
4. First aid measures.
5. Firefighting measures.
6. Accidental release measures.
7. Handling and storage.
8. Exposure controls/personal protection.
9. Physical and chemical properties.
10. Stability and reactivity.
11. Toxicological information.
12. Ecological information (non-mandatory).
13. Disposal considerations (non-mandatory).
14. Transport information (non-mandatory).
15. Regulatory information (non-mandatory).
16. Other information including information on preparation and revision of the SDS.

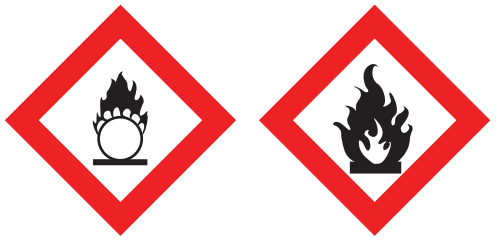
The primary purpose of the reformatting is standardization. But OSHA also wants to ensure, as best it can, that appropriate treatment is administered to exposed workers as quickly as possible after exposure. Interestingly, the GHS does not address the issue of employee (or other) training. OSHA has included as part of the new rule, however, a mandate that employees be trained on the revised HCS as a part of the employer's implementation of its revised HCP.

The deadlines for implementation of the revised HCS's requirements are stepped. Full compliance will not be required of employers until 1 June 2016. But the following interim and ultimate deadlines apply both to chemical manufacturers and importers and to employers:

- All employee training on new labeling requirements and SDS formats must be conducted no later than 1 December 2013.
- New and compliant labels and SDSs must be in use no later than 1 June 2015, though distributors (versus manufacturers or importers) of hazardous chemicals have six more months, until 1 December 2015, to comply.
- Updated HCPs and signs must be in place in every workplace no later than 1 June 2016.

GHS has nine pictograms. OSHA has adopted eight of these, omitting the pictogram for environmental hazards. Each of these pictograms consists of a symbol in black on a white background within a red

Figure 1



Two examples of the GHS' nine pictograms: (a) oxidizers and (b) flammables, self-reactives, pyrophorics, self-heating, emits flammable gas and organic peroxides.

square frame set on a point (i.e., a red diamond). The specific pictograms on a label are to be determined based on the hazard classification of the particular chemical. For example, Category 1 through 3 acute oral toxins take the skull-and-crossbones pictogram, while Category 4 acute oral toxins take the exclamation point pictogram. No pictogram is required for the hazard of combustible dust. A commenter noted that the pictograms are not self-explanatory; OSHA requires employees to be trained on them by 1 December 2013.

The frame for the pictogram must be red. GHS gives national authorities discretion to allow a black border instead of red for products that are not exported, but OSHA decided that a red frame would help call attention to the pictogram. Thus, red frames are required, and all labels must be printed on color printers. OSHA estimates that the costs to purchase upgraded label printing equipment and supplies or to purchase pre-printed color labels to meet this requirement will be US$24.1 million.

Conclusion

The revised GHS HCS impacts chemical manufacturers and importers more heavily than it does employers subject to the original HCS standards. Manufacturers and importers will be required to reevaluate chemicals under the OSHA's GHS criteria, classify them appropriately, categorize them appropriately (if needed), amend their MSDSs to comply with the SDS format requirements, and label the chemicals' containers consistent with the revised HCS's provisions. Employers then will have to deal with those SDSs and labels as under the original HCS.

References

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