Revised OSHA Rules—The “Right to Know” Becomes the Right to Understand

The Hazard Communication Standard and the Laboratory Standard, commonly referred to as right-to-know laws, provide the regulatory foundation for awareness of chemical safety in the workplace, including schools and laboratories. Most teachers today are very familiar with the provisions of these regulations, especially how chemical hazard information is communicated on labels and Material Safety Data Sheets (MSDS). Chemical inventory, labeling, MSDS, and training requirements transformed how a generation thinks about the physical and chemical hazards of substances and how to protect themselves against those hazards. In the almost 30 years since their implementation these laws helped usher in a culture of chemical safety for teachers, students, administrators, and the community.

What Is GHS?

In March 2012 OSHA published the first major revision to the Hazard Communication Standard since its inception. In announcing the revision to incorporate what is known as GHS, OSHA stated that its goal was to transform the “right to know” into the right to understand chemical hazards. GHS stands for the Globally Harmonized System of Classification and Labeling of Chemicals. GHS is a document that establishes objective criteria for classifying and identifying chemical hazards. The overarching goal is to ensure the safe use of chemicals by providing practical, reliable, and comprehensible information on their hazards.

Misunderstandings and misconceptions concerning chemical toxicity provide good examples for why OSHA decided to adopt GHS. For instance, the news media all too often describes chemicals using the adjective toxic. Yet the misunderstanding arises at least in part due to conflicting criteria for describing a chemical as toxic. Various regulatory and advisory organizations, such as ANSI, the NFPA, EPA, OSHA and DOT, employ a range of values, from 50 to 500 to 5000 mg/kg, to determine if a substance is harmful based on its acute toxicity or LD₅₀.

Teacher Training

Passage of the GHS provisions in March 2012 started a three-year “clock” for employers and chemical manufacturers to comply with the new requirements. The first deadline under the law is December 2013. By this date schools and school districts must provide training for teachers and staff to understand how to read GHS labels and the new Safety Data Sheets (the “M” in MSDS has been dropped). Over the next three years Flinn Scientific will provide teachers with the information and training needed to meet GHS requirements and improve chemical safety in your school. Note that chemical manufacturers and distributors have until June 2015 to reclassify chemicals and produce GHS-formatted labels and SDS for all new products. Training precedes implementation!

GHS Building Blocks

GHS depends on a foundation or collection of building blocks to achieve the goals of effective hazard communication. Classification of chemicals is the starting point—GHS establishes 16 physical hazard categories and 10 health hazard categories for chemicals. (There are also environmental hazard categories, but these are not included in the revised Hazard Communication Standard provisions.) Hazard categories are assigned based on consistent, defined criteria. Within most categories GHS further distinguishes multiple hazard levels or ranks, with 1 being most severe.
Communicating these hazards is accomplished by means of labels and SDS. There are four main GHS building blocks: pictograms (graphics or symbols) and signal words both quickly identifying the main hazards. Text-based hazard statements and precautionary statements further describe each hazard and recommended preventive measures.

**Introduction to GHS—A Picture Is Worth a Thousand Words**

Let’s begin our GHS training now with the pictograms. These are standard symbols enclosed within a red diamond border, and there are eight different pictograms for physical and health hazards of chemicals. With this e-mail we have provided a Flinn Safety Fax publication for the symbols and their meanings. The choice of whether a pictogram appears on a label will depend on the objective criteria we alluded to earlier. Thus the “skull and bones” pictogram for acutely toxic will be used for chemicals with oral LD<sub>50</sub> values less than or equal to 300 mg/kg. For chemicals having oral LD<sub>50</sub> values in the range of 300–2000 mg/kg, the “exclamation point” pictogram will be used. Different signal words and hazard statements will be associated with these pictograms on the labels and SDS to further distinguish the hazard level or rank within this hazard category. The next time you prepare for lab, take a moment to look at the bottle label for any chemical you are using. See if you can identify the GHS pictogram(s) that will be used in the future to communicate its hazard information.

**Effective Safety Training from Flinn Scientific**

Just as you employ a range of differentiated instruction in your classroom to help your students achieve learning objectives, we encourage you to do the same to meet your safety training goals. Effective safety training is comprehensive, ongoing, and scaffolded. The free Flinn Scientific Laboratory Safety Course is available online for all teachers. Please take advantage of this opportunity now to become “Flinn Safety Certified.” We guarantee you and your students will benefit. In the months ahead Flinn Scientific will provide additional training tools, one step at a time, in the form of free videos, publications, and safety notes, to help you build knowledge and confidence in your understanding of GHS.

**Thank You for Your Support!**

Please continue to support our efforts to improve safety in school science labs by ordering your science supplies and laboratory chemicals from Flinn Scientific.

**Next Month’s Topic**

Acid Safety