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THE ADVISOR

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SPECIALIZING IN SAFETY, ENVIRONMENTAL AND HUMAN RESOURCES TOPICS

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THE 10 MOST DANGEROUS JOBS IN THE US

There are many occupations that routinely claim the lives of workers each year. These are summarized below, based on statistics and press releases from the Bureau of Labor Statistics.

Although grim, the statistics have improved greatly over the past decades. In fact, since the Bureau of Labor Statistics (BLS) began tracking fatal occupational injuries 19 years ago, 2009 was the safest year on record with 4,551 fatal work injuries. In 2010 there were 4,690 and in 2011, 4,609. Nonetheless, the fatality rates of some occupations still remain extremely high. Below are the 10 most dangerous jobs in America according to the BLS.

Fishermen

Two people died when a 20-foot fishing boat capsized near the top of Alaska's panhandle. A third person was able to climb on top of the overturned skiff to await rescue. As the BLS states, "this occupation is characterized by strenuous work, long hours, seasonal employment, and some of the most hazardous conditions in the workforce."

Logging Workers

This occupation repeatedly takes a spot in the top 10 as not only one of America's, but the world's most dangerous jobs. In one recent example, 61-year-old John Hutt, a Colorado logger, cut off his toes after he became trapped under heavy logging equipment. He then drove himself to an area where there was enough cell phone reception to call an ambulance.

Airplane Pilots and Flight Engineers

It may be hard to believe that working in the airline industry is almost as dangerous as the mining industry, but according to the BLS, this is true. The bureau states that there were 146 fatal work injuries for this industry in 2011.

Farmers and Ranchers

A 40-year-old Illinois farmer was crushed to death by his tractor after it fell into a hole on his farm, which he was filling with dirt. And a woman was hit and run over by a skid loader on a farm in Wisconsin. She was pronounced dead on the scene. There were 235 crop production deaths in 2011.

Mining Machine Operators

The most infamous accident within this industry is undoubtedly the Upper Big Branch Mine explosion in April of 2010, which claimed the lives of 29 out of the 31 miners on site. The accident was the worst in the United States since 1970, when 38 minters were killed at Finley Coal Company's mines in Kentucky. There were 154 fatalities in the mining industry last year.

Roofers

A 56-year-old worker was re-securing metal roof panels on a building at Horenberger Field at Illinois Wesleyan University when he fell from scaffolding. He died in the hospital eight days later and his employer, Union Roofing, was cited by OSHA for two safety violations.

Sanitation Workers

A tragic accident occurred on Labor Day when a 17-year-old sanitation employee fell off of a moving garbage truck and was run over, killing him instantly. Fortunately, fatalities have diminished in recent years with more focus on training and better safety equipment.

Truck Drivers and Delivery Workers

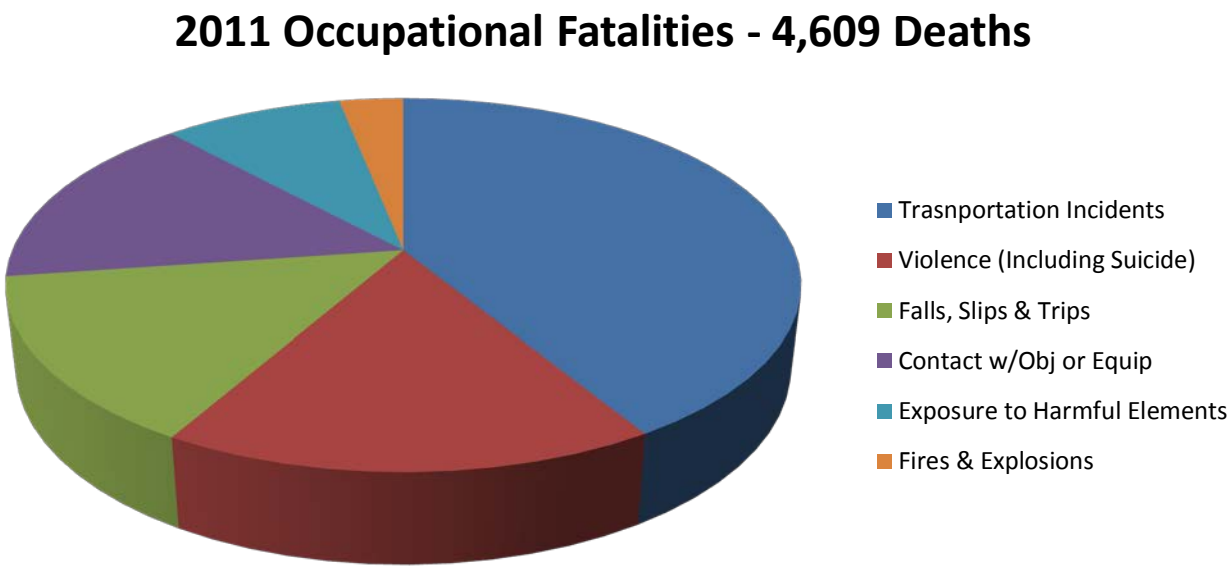
Last year, a commercial truck driver was using his cell phone to make a call when his truck crossed the median in central Kentucky, striking a van that was carrying 12 members of a family. 10 people in the van plus the truck driver were killed.

Industrial Machine Workers

The number of accidents in this field is staggering. In 2010, a Florida man had his genitals severed off after an accident involving machinery at a Future Foam Carpet Cushion in Orlando. The company was fined $42,500 by OSHA for 10 serious safety violations.

Police Officers

2011 had a 13% increase in line-of-duty deaths among U.S. law enforcement, leaving 173 dead. It was the first time since 1997 that more were killed by gunfire than by traffic accidents.



MODERN BARRIER OPTIONS AVOID SERIOUS ACCIDENTS

Sometimes the most serious industrial accidents are the easiest ones to avoid. For instance, there's a relatively simple way to keep forklifts and pedestrians from falling off loading docks and to prevent forklifts from crashing through closed dock doors. The concept of safety barriers isn't new, yet many are unaware of how the devices have evolved to better suit the needs of users.

Protecting People, Products, Equipment

For years safety barriers were limited to traditional steel guardrails. However, steel guardrails are not always the best solution as they can provide more protection than needed for the cost. The limitations and expense of traditional steel guardrails are why some have gone so far as to forgo the use of guardrails altogether-often with increased safety risk. Users demands for flexibility, accessibility, and adaptability has been a driving factor in better safety barrier design.

In Plant Separation Systems

There are two main types of in-plant separation system: fabric safety barriers and fixed guardrail units. Both separate and define work areas, walkways, and interior loading docks and protect pedestrians, machinery, equipment, workstations, and products from the dangers of material handling equipment. They also address the shortcomings of painted yellow lines on the floor.

Fabric safety barriers generally consist of mesh curtains and/or straps stretched between steel mounting posts. They are highly adaptable and provide the flexibility that most operations require. They allow easy removal to gain full access to a specific area or quick configuration changes to better match facility's layout and/or product process. With flexibility comes increased productivity.

Factors to consider when choosing fabric safety barriers are the amount of stopping power needed and their ease of use. Some barriers are only meant to provide a substantial visual and physical barrier. Others need to provide a visual barrier, as well as, have the strength to stop a 10,000 pound forklift traveling 4 mph. Ease of use is another key factor, some units only require one person to remove and reposition the barrier in less than 10 seconds.

Fixed-guardrail barriers address the need for ease of access and adaptability. Some light-duty systems, for example, are modular in design and feature flexible PVC railings that can easily be removed and replaced. Most are designed to absorb incidental impacts from material handling equipment, whereas traditional steel guardrails provide maximum stopping power when a high degree of protection is needed from material handling equipment.

CARBON MONOXIDE FROM LIFT TRUCKS

There are many instances of over-exposure to carbon monoxide for drivers when vehicles are improperly tuned, or used without sufficient ventilation.

Here are the facts:

- Even properly tuned lift trucks emit CO at about 0.4% (4,000 ppm) of the tailpipe exhaust. The permissible exposure limit for CO is 50 ppm.
- Poorly tuned lift trucks can emit much more CO. In a Michigan OSHA study, "Carbon Monoxide Hazards from Internal Combustion Engines" over half the forklifts tested were emitting above 5% CO and a few were above 10%.
- CO concentration samples (both tailpipe and driver breathing) should be taken regularly.
- Employers must control emissions and driver exposures as much as possible.

The lack of warning properties makes CO especially dangerous. CO is colorless, tasteless, and odorless and indoor air concentrations can rise quickly even in relatively open spaces with ventilation. It is important that employees are trained and know the initial warning signs of CO poisoning – light-headedness, dizziness, nausea, and/or headache. Employees who use or work around fuel-powered equipment should understand that medical attention may be required. Victims should be removed from the exposure area, emergency responders notified (call 911), and appropriate first aid given.

Electric-powered trucks can be substituted for internal combustion trucks thereby eliminating the CO source. Cost comparisons can be provided by suppliers.

Contact your lift truck supplier or manufacturer, and follow recommended tune-ups, testing, and ventilation. Suggested hazard controls for combustion powered trucks:

- Follow manufacturer's instructions and provide regular maintenance and testing;
- Use properly-adjusted carburetors designed for optimum air and fuel mixture balance;
- Replace the air cleaner regularly;
- Adjust engine timing per manufacturer's specifications; and
- Use a CO analyzer designed for tailpipe exhaust sampling to adjust the fuel system to approximately 0.4 to 0.7% CO.

Consider using a catalytic converter to remove CO. A catalyst converts CO and unburned hydrocarbons into carbon dioxide and water vapor. They require regular maintenance because overloading of the catalyst will reduce its efficiency. The combination of a catalytic converter and a properly tuned engine is thought to be able to achieve tailpipe CO emissions below 200 ppm.

Provide adequate dilution ventilation. The 26th edition of ACGIH Ventilation Manual (Vol. 1, Section 13) recommends the following dilution rates:

- 10,000 cfm / propane-fueled lift truck;
- 16,000 cfm / gasoline-fueled lift truck;
- 10,000 cfm / operating automobile;
- 20,000 cfm (or more) / operating truck; and
- 100 cfm / horsepower for diesel-fueled vehicle.

These dilution rates assume a regular periodic maintenance program that limits CO concentrations of gasses to 1 percent for propane-fueled trucks and 2 percent for gasoline fueled trucks. These rates also assume vehicles are only used for half of the work day, there is good distribution of air-flow, space volume is greater than 150,000 cubic feet / lift truck, and trucks are powered by engines of less than 60 HP. If operating conditions vary from these assumptions, the ventilation rate should be increased significantly. See Owner's Manual for more information.

Required dilution ventilation rates can also be estimated from the following formula:

$$\mathbf{Q} = \mathbf{q} \times \mathbf{Km} \times 10^6/\mathbf{C}$$

Where:

Q = dilution air volume flow rate, cubic feet per minute (uncontaminated air)

q = emission rate of CO in exhaust gases, cubic feet per minute

Km = poor air mixing factor, unitless, usually assumed to be 1.5 to 4, depending on local factors (e.g. storage impending air-flow, etc.)

C = acceptable exposure concentration, in ppm – usually some percentage of the OEL

Quotable Quotes

"*A classic is something that everybody wants to have read and nobody wants to read.*"

- Mark Twain

"Since childhood is a time when kids prepare to be grown-ups, I think it makes a lot of sense to completely traumatize your children. Gets 'em ready for the real world."

- George Carlin

OSHA UPDATE

New Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Rule

"Exposure to hazardous chemicals is one of the most serious threats facing American workers today," said U.S. Secretary of Labor Hilda Solis. "Revising OSHA's Hazard Communication standard will improve the quality and consistency of hazard information, making it safer for workers to do their jobs and easier for employers to stay competitive."

The Hazard Communication Standard (HCS) is now aligned with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This update to the Hazard Communication Standard (HCS) will provide a common and coherent approach to classifying chemicals and communicating hazard information on labels and safety data sheets. Once implemented, the revised standard will improve the quality and consistency of hazard information in the workplace, making it safer for workers by providing easily understandable information on appropriate handling and safe use of hazardous chemicals. This update will also help reduce trade barriers and result in productivity improvements for American businesses that regularly handle, store, and use hazardous chemicals while providing cost savings for American businesses that periodically update safety data sheets and labels for chemicals covered under the hazard communication standard.

Hazard Communication Standard

To ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers. OSHA's Hazard Communication Standard (HCS) requires the development and dissemination of such information:

- Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and safety data sheets to convey the hazard information to their downstream customers;
- All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals appropriately.

Major changes to the Hazard Communication Standard

- Hazard classification: Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.
- Labels: Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- Safety Data Sheets: Will now have a specified 16-section format.
- Information and training: Workers must be trained December 1, 2013 on the new labels

elements and safety data sheets format to facilitate recognition and understanding.

What is the Globally Harmonized System?

The Globally Harmonized System (GHS) is an international approach to hazard communication, providing agreed criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets. The GHS was negotiated in a multi-year process by hazard communication experts from many different countries, international organizations, and stakeholder groups. It is based on major existing systems around the world, including OSHA's Hazard Communication Standard and the chemical classification and labeling systems of other US agencies.

The result of this negotiation process is the United Nations' document entitled "Globally Harmonized System of Classification and Labeling of Chemicals," commonly referred to as The Purple Book. This document provides harmonized classification criteria for health, physical, and environmental hazards of chemicals. It also includes standardized label elements that are assigned to these hazard classes and categories, and provide the appropriate signal words, pictograms, and hazard and precautionary statements to convey the hazards to users. A standardized order of information for safety data sheets is also provided. These recommendations can be used by regulatory authorities such as OSHA to establish mandatory requirements for hazard communication, but do not constitute a model regulation.

Why did OSHA decide to modify the Hazard Communication Standard to adopt the GHS?

OSHA has modified the Hazard Communication Standard (HCS) to adopt the GHS to improve safety and health of workers through more effective communications on chemical hazards. Since it was first promulgated in 1983, the HCS has provided employers and employees extensive information about the chemicals in their workplaces. The original standard is performance-oriented, allowing chemical manufacturers and importers to convey information on labels and material safety data sheets in whatever format they choose. While the available information has been helpful in improving employee safety and health, a more standardized approach to classifying the hazards and conveying the information will be more effective, and provide further improvements in American workplaces. The GHS provides such a standardized approach, including detailed criteria for determining what hazardous effects a chemical poses, as well as standardized label elements assigned by hazard class and category. This will enhance both employer and worker comprehension of the hazards, which will help to ensure appropriate handling and safe use of workplace chemicals. In addition, the safety data sheet requirements establish an order of information that is standardized. The harmonized format of the safety data sheets will enable employers, workers, health professionals, and emergency responders to access the information more efficiently and effectively, thus increasing their utility.

Adoption of the GHS in the US and around the world will also help to improve information received from other countries—since the US is both a major importer and exporter of chemicals, American workers often see labels and safety data sheets from other countries. The diverse and sometimes conflicting national and international requirements can create confusion among those

who seek to use hazard information effectively. For example, labels and safety data sheets may include symbols and hazard statements that are unfamiliar to readers or not well understood. Containers may be labeled with such a large volume of information that important statements are not easily recognized. Given the differences in hazard classification criteria, labels may also be incorrect when used in other countries. If countries around the world adopt the GHS, these problems will be minimized, and chemicals crossing borders will have consistent information, thus improving communication globally.

What is the phase-in period in the revised Hazard Communication Standard?

The table below summarizes the phase-in dates required under the revised Hazard Communication Standard (HCS):

Completion Date	Requirement	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015 December 1, 2015	Compliance with all modified provisions of this final rule, except: The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers

OSHA recognizes that hazard communication programs will go through a period of time where labels and SDSs under both standards will be present in the workplace. This will be considered acceptable, and employers are not required to maintain two sets of labels and SDSs for compliance purposes. During the phase-in period, employers would be required to be in compliance with either the existing HCS or the revised HCS, or both.

Why must training be conducted prior to the compliance effective date?

OSHA is requiring that employees are trained on the new label elements (e.g., pictograms and signal words) and SDS format by December 2013, while full compliance with the final rule will begin in 2015. While many countries are in various stages of implementing the GHS, OSHA believes that it is possible that American workplaces may begin to receive labels and SDSs that are consistent with the GHS shortly after publication. Thus, making it important to ensure that when employees begin to see the new labels and SDSs in their workplaces, they will be familiar with them, understand how to use them, and access the information effectively.

What are the major changes to the Hazard Communication Standard?

The three major areas of change are in hazard classification, labels, and safety data sheets:

- **Hazard classification:** The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.
- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Will now have a specified 16-section format.

How will labels change under the revised Hazard Communication Standard?

Under the current Hazard Communication Standard (HCS), the label preparer must provide the identity of the chemical, and the appropriate hazard warnings. This may be done in a variety of ways, and the method to convey the information is left to the preparer. Under the revised HCS, once the hazard classification is completed, the standard specifies what information is to be provided for each hazard class and category. Labels will require the following elements:

- **Pictogram:** a symbol plus other graphic elements, such as a border, background pattern, or color that is intended to convey specific information about the hazards of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required under the HCS.
- **Signal words:** a single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.
- **Hazard Statement:** a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.
- **Precautionary Statement:** a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling of a hazardous chemical.

What pictograms are required in the revised Hazard Communication Standard and, what hazard does each identify?

There are nine pictograms under the GHS to convey the health, physical and environmental hazards. The final Hazard Communication Standard (HCS) requires eight of these pictograms, the exception being the environmental pictogram, as environmental hazards are not within OSHA's jurisdiction. The hazard pictograms and their corresponding hazards are shown below.

HCS Pictograms and Hazards		
Health Hazard 	**Flame** 	**Exclamation Mark** 
• Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	• Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	• Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non Mandatory)
Gas Cylinder 	**Corrosion** 	**Exploding Bomb** 
• Gases under Pressure	• Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	• Explosives • Self-Reactives • Organic Peroxides
Flame over Circle 	**Environment (Non Mandatory)** 	**Skull and Crossbones** 
• Oxidizers	• Aquatic Toxicity	• Acute Toxicity (fatal or toxic)

Can I use a black border on pictograms for domestic shipment?

Under the revised Hazard Communication Standard (HCS), pictograms must have red borders. OSHA believes that the use of the red frame will increase recognition and comprehensibility. Therefore, the red frame is required regardless of whether the shipment is domestic or international.

Will OSHA allow blank red borders?

The revised Hazard Communication Standard (HCS) requires that all red borders printed on the label have a symbol printed inside it. If OSHA were to allow blank red borders, workers may be confused about what they mean and concerned that some information is missing. OSHA has determined that prohibiting the use of blank red borders on labels is necessary to provide the maximum recognition and impact of warning labels and to ensure that users do not get desensitized to the warnings placed on labels.

When must label information be updated?

In the revised Hazard Communication Standard (HCS), OSHA is lifting the stay on enforcement regarding the provision to update labels when new information on hazards becomes available. Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within **six months** of becoming aware of the new information, and shall ensure that labels on containers of hazardous chemicals shipped after that time contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importer, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

How will workplace labeling provisions be changing under the revised Hazard Communication Standard?

The current standard provides employers with flexibility regarding the type of system to be used in their workplaces and OSHA has retained that flexibility in the revised Hazard Communication Standard (HCS). Employers may 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. Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information 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.

How is the Safety Data Sheet (SDS) changing under the revised Hazard Communication Standard?

The information required on the safety data sheet (SDS) will remain essentially the same as that in the current standard. The current Hazard Communication Standard (HCS) indicates what information has to be included on an SDS but does not specify a format for presentation or order of information. The revised HCS requires that the information on the SDS is presented using consistent headings in a specified sequence.

Paragraph (g) of the final rule indicates the headings of information to be included on the SDS and the order in which they are to be provided. In addition, Appendix D indicates what

information is to be included under each heading. 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.

The format of the 16-section SDS should include the following sections:

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

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

Will TLVs be required on the Safety Data Sheet (SDS)?

OSHA is retaining the requirement to include the American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) on the safety data sheet (SDS) in the revised Standard. OSHA finds that requiring TLVs on the SDS will provide employers and employees with useful information to help them assess the hazards presented by their workplaces. In addition to TLVs, OSHA permissible exposure limits (PELs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet are also required.

May the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists be used to make carcinogen classifications?

In the revised Hazard Communication Standard (HCS), OSHA has provided classifiers with the option of relying on the classification listings of IARC and NTP to make classification decisions regarding carcinogenicity, rather than applying the criteria themselves. OSHA believes that this will make classification easier for classifiers, as well as lead to greater consistency. In addition, OSHA has provided in non-mandatory Appendix F of the revised rule, guidance on hazard classification for carcinogenicity. Part A of Appendix F includes background guidance provided by GHS based on the Preamble of the IARC "Monographs on the Evaluation of Carcinogenic Risks to Humans" (2006). Part B provides IARC classification information. Part C provides background guidance from the National NTP "Report on Carcinogens" (RoC), and Part D is a

table that compares GHS carcinogen hazard categories to carcinogen classifications under IARC and NTP, allowing classifiers to be able to use information from IARC and NTP RoC carcinogen classifications to complete their classifications under the GHS, and thus the HCS.

Will the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) classifications be required on the Safety Data Sheet (SDS)?

OSHA has retained the requirement to include IARC and NTP classifications on safety data sheets (SDSs). Therefore, if a chemical is listed as a carcinogen by either IARC or NTP, it must be noted on the SDS. Additionally, if OSHA finds a chemical to be a carcinogen, it must be noted on the SDS as well.

How has OSHA addressed hazards covered under the current Hazard Communication Standard that have not been addressed by the GHS?

In the Notice of Proposed Rulemaking (NPRM), OSHA proposed to include hazards currently covered under the Hazard Communication Standard (HCS) that have yet to be addressed by the GHS (OSHA provided several examples: simple asphyxiants, and combustible dust) in a separate category called "Unclassified Hazards." In response to comments from the regulated community, OSHA has renamed the category to "Hazards Not Otherwise Classified (HNOC)" to minimize confusion. In the final HCS, HNOC hazards will not be required to be disclosed on the label but will be required to be disclosed in section 2 of the Safety Data Sheet (SDS). This reflects how GHS recommends these hazards should be disclosed. Chemical manufacturers and importers are expected to assess these hazards when they are conducting their hazard evaluation of physical and health hazards. A new or separate evaluation is not required. Also in the final standard, in response to comments, OSHA has removed pyrophoric gases, simple asphyxiants, and combustible dust from the HNOC hazard category and has addressed these chemicals individually (see question below for more information on each hazard).

How has OSHA addressed pyrophoric gases, simple asphyxiants, and combustible dust?

In the revised Hazard Communication Standard (HCS), OSHA has added pyrophoric gases, simple asphyxiants and combustible dust to the definition of "hazardous chemical." OSHA has also added definitions to the revised HCS for pyrophoric gases and simple asphyxiants, 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 current HCS. Pyrophoric gases must be addressed both on container labels and SDSs. OSHA has provided label elements for pyrophoric gases which include the signal word "danger" and the hazard statement "catches fire spontaneously if exposed to air."

- **Simple asphyxiants:**
  OSHA has revised the definition of simple asphyxiants that was proposed in the Notice of Proposed Rulemaking (NPRM) as a result of comments from the regulated community. In

the final HCS, simple asphyxiants must be labeled where appropriate, and be addressed on SDSs. OSHA has provided label elements for simple asphyxiants which include the signal word "warning" and the hazard statement "may displace oxygen and cause rapid suffocation."

- **Combustible dust:**
  OSHA has **not** provided a definition for combustible dust to the final HCS given ongoing activities in the specific rulemaking, as well as in the United Nations Sub-Committee of Experts on the GHS (UN/SCEGHS). However, guidance is being provided through existing documents, including the Combustible Dust National Emphasis Program Directive CPL 03-00-008, which includes an operative definition, as well as provides information about current responsibilities in this area. In addition, there are a number of voluntary industry consensus standards (particularly those of the NFPA) that address combustible dust.

  In the final HCS, combustible dust hazards must be addressed on labels and SDSs. Label elements are provided for combustible dust in the final HCS and include the signal word "warning" and the hazard statement "May form combustible dust concentrations in the air."

  For chemicals in a solid form that do not present a combustible dust hazard, but may form combustible dusts while being processed in normal downstream uses, paragraph (f) (4) of the HCS allows the chemical manufacturer some flexibility in labeling requirements. The manufacturer or importer may transmit the label to the customer at the time of the initial shipment, but the label does not need to be included with subsequent shipments unless it changes. This provides the needed information to the downstream users on the potential hazards in the workplace, while acknowledging that the solid metal or other materials do not present the same hazards that are produced when these materials are processed under normal conditions of use.

How many businesses and workers would be affected by the revised Hazard Communication Standard?

OSHA estimates that over 5 million workplaces in the United States would be affected by the revised Hazard Communication Standard (HCS). These are all those workplaces where employees—a total of approximately 43 million of them—could be exposed to hazardous chemicals. Included among these 5 million workplaces are an estimated 90,000 establishments that create hazardous chemicals; these chemical producers employ almost 3 million workers.

What are the estimated overall costs for industry to comply with the revised Hazard Communication Standard?

The revised Hazard Communications Standard's (HCS) total cost, an estimated $201 million a year on an annualized basis for the entire United States, is the sum of four major cost elements. (1) OSHA estimates that the cost of classifying chemical hazards in accordance with the GHS criteria and revising safety data sheets and labels to meet new format and content requirements would be $22.5 million a year on an annualized basis. (2) OSHA estimates that training for employees to become familiar with new warning symbols and the revised safety data sheet format under GHS would cost $95.4 million a year on an annualized basis. (3) OSHA estimated

annualized costs of $59 million a year for management to become familiar with the new GHS system and to engage in other management-related activities as may be necessary for industry's adoption of GHS. (4) OSHA estimated annualized costs of $24.1 million for printing packaging and labels for hazardous chemicals in color.

What are the estimated benefits attributable to the revised HCS?

OSHA expects that the modifications to the Hazard Communication Standard (HCS) will result in increased safety and health for the affected employees and reduce the numbers of accidents, fatalities, injuries, and illnesses associated with exposures to hazardous chemicals. The GHS revisions to the HCS standard for labeling and safety data sheets would enable employees exposed to workplace chemicals to more quickly obtain and to more easily understand information about the hazards associated with those chemicals. In addition, the revisions to HCS are expected to improve the use of appropriate exposure controls and work practices that can reduce the safety and health risks associated with exposure to hazardous chemicals.

OSHA estimates that the revised HCS will result in the prevention of 43 fatalities and 585 injuries and illnesses (318 non-lost-workday injuries and illnesses, 203 lost-workday injuries and illnesses, and 64 chronic illnesses) annually. The monetized value of this reduction in occupational risks is an estimated $250 million a year on an annualized basis.

OSHA estimates that the revised HCS will result in savings of $475.2 million from productivity improvements for health and safety managers and logistics personnel, $32.2 million during periodic updating of SDSs and labels, and $285.3 million from simplified hazard communication training.

OSHA anticipates that, in addition to safety and health benefits, the revised HCS will result in four types of productivity benefits: (1) for chemical manufacturers, because they will need to produce fewer SDSs in future years; (2) for employers, in providing training to new employees as required by the existing OSHA HCS through the improved consistency of the labels and SDSs. (3) for firms engaging in, or considering engaging in, international trade.

I understand that the United Nations revises the GHS every two years. How will OSHA manage and communicate changes to the Hazard Communication Standard?

It is expected that the GHS will be a living document and is expected to remain up-to-date and relevant; therefore further changes may be adopted on a two year cycle. Presently most of the recent updates have been clarification of text. However, OSHA anticipates that future updates of the Hazard Communication Standard (HCS) may be necessary and can be done through various rulemaking options, including:

- **Technical updates** for minor terminology changes,
- **Direct Final Rules** for text clarification, and
- **Notice and Comment rulemaking** for more substantive or controversial updates such as additional criteria or changes in health or safety hazard classes or categories.

EPA Update

Ohio EPA Accepting Applications for Recycling Grants

Ohio EPA is accepting applications for various recycling grants. Ohio EPA now administers programs relating to statewide source reduction, recycling, recycling market development and litter prevention. Grant programs formerly under the Ohio Department of Natural Resources, Division of Recycling and Litter Prevention, now can be accessed at Ohio EPA.

Three grants provide assistance to local governments and businesses to collect and process recyclables and use them in a manufacturing setting. Grant programs include:

- **Community Recycling Grant:** This funding allows Ohio communities to support and expand community recycling and litter prevention efforts. Grants provide new infrastructure for collection and materials processing, involving materials such as construction and demolition debris, electronics, glass, paper-based materials and plastics. Those eligible to apply include municipal corporations, counties, townships, villages, state colleges or universities, solid waste management districts or authorities, park districts and health districts. The grants require 50 percent matching funds be available and expended on costs approved for the project.
- **Litter Collection and Prevention Grant:** This program seeks grant applications that will improve local environments through litter prevention, beautification and waste reduction activities. Ohio communities and nonprofit organizations can receive funding to support litter cleanup activities and litter prevention and awareness. Grant proposals must include a litter cleanup activity to take place on public land, roadsides or public waterways, and involve the use of volunteers. In addition to other eligible entities listed above, Keep Ohio Beautiful affiliates, boards of education and nonprofit organizations also may be eligible. Ten percent matching funds are required.
- **Market Development Grant:** Grant funds are offered to Ohio businesses that propose to create infrastructure for successful markets of recyclable materials and related products. The program seeks proposals involving materials collected or processed in Ohio. In addition to the eligible entities listed under the community recycling grant above, business or nonprofit applicants must work under contract with an eligible governmental agency serving as a pass-through agency for documenting and receiving funds. This grant typically focuses on equipment purchase. The cooperating enterprise must commit to matching grant funds by 100 percent, with a maximum grant period of 24 months.

Grant applications should indicate how the applicant will comply with matching fund and other requirements found in the grant application handbook available now. Grant applications for all three programs are due February 1, 2013. Grant awards will be announced in May 2013, with funding available in July 2013. For more information, potential applicants can email or call Chet Chaney, (614) 728-0043.

CITATIONS AND PENALTIES

Ohio Company Cited After 16-Year-Old Injured On Job Site

The Department of Labor cited Waymar Construction LLC for child labor and safety violations after a 16-year-old worker suffered cranial trauma and fractures from falling off a scissor lift during roofing operations at a Sandusky, Ohio, job site. OSHA fined Waymar $20,020 and cited the company for failing to provide fall protection training and ensure workers were protected from fall hazards. DOL's Wage and Hour Division assessed civil penalties of $30,350 against the company for allowing a minor to operate a hoisting device and perform roofing work in violation of the Fair Labor Standards Act's (FLSA) child labor provisions. Waymar was also found to be in violation of the overtime provisions of the FLSA, for paying workers "straight time" wages for hours worked over 40 in a week.

- OSHA has issued a hazard alert about the hazards of using portable, hydraulic-powered scissor lifts. Hazards associated with scissor lifts include using the equipment during high winds or bad weather; overloading the equipment with heavy objects; removing the guardrails during operation; and driving the lift while in an elevated position over uneven or unstable ground.

OSHA Cites Meat Processing Plant for Exposing Workers to Falls and Other Hazards

OSHA cited Sigma Processed Meats Inc. for 16 serious and three repeat violations following an inspection that found workers were exposed to fall and other hazards at the company's processing plant in Seminole. Proposed penalties total $204,800. OSHA began its investigation at the plant after receiving a complaint. Inspectors found serious violations that included failing to provide guardrails as fall protection for employees working on elevated walking/working surfaces, failing to provide personal protective equipment such as goggles or face shields, failing to train employees on the use of hazardous chemicals, and failing to address hazards created by deficiencies in the company's process safety management system for anhydrous ammonia. The company was also cited for repeat violations that included failing to develop and implement a lockout/tagout program for isolation of energy.

Quotable Quotes

"We never talked, my family. We communicated by putting Ann Landers articles on the refrigerator."

- Judy Gold

BITS & PIECES

Parent Clash with Police

Police clashed with residents of two neighboring villages in northern China where nearly all the children were poisoned by lead, apparently from a nearby smelter, reports said, and the latest sign of growing anger over China's rampant industrial pollution. Several hundred villagers tore down fences and blocked traffic outside the Dongling Lead and Zinc Smelting Co. in Shaanxi province after news of the poisoning emerged.

Unintended Consequences

- The "Berkeley Pit" in Butte, Montana is the nation's largest environmental-disaster site, with 40 billion gallons of highly toxic copper-mine waste that the federal government has long feared is too expensive to clean up. However, Montana Tech researchers, writing in the Journal of Organic Chemistry in July, have found more than 160 types of "extremophiles" (organisms that thrive in toxicity) in the pit and have demonstrated that some are effective against lung and ovarian cancers.

- Kimberly Baker 22, sought child support in Warrensburg, Virginia from the father of her daughter. However, when officials realized that the father, now 16, would have been 13 when the child was conceived, that made him a rape victim under state law, and thus, they arrested Baker.

Compelling Explanations

- In 2002, Jeffery Klein and Brett Birdwell, both 17 at the time, trespassed onto a railroad yard in Lancaster, PA and climbed atop a boxcar to see what the view was like. Both were severely burned by a 12,500-volt line on the roof. They sued Amtrak and Norfolk Southern railroads for not having done enough to prevent them from trespassing. In October, a federal jury awarded about $12 million in compensatory damages plus $12 million in damages.

- In a deposition, Ennis, Texas physician Aniruddha Chitale admitted that the semen that patient Sherry Simpson found on her face after a 2004 colonoscopy was his and thus later pleaded guilty to sexual assault. However, in his deposition (according to a report by Dallas' WFAA TV), Chitale insisted that the act that produced the semen was "unintentional." (Simpson is now suing Ennis Regional Medical Center for having tolerated Chitale's behavior.)