

# FACT SHEET

## ***Modification of the Hazard Communication Standard (HCS) to align with a Globally Harmonized System of Classification and Labelling of Chemicals (GHS)***

### ***What This Means for Fire and Building Code Officials***

Fire and Building Code Officials are likely to see the new Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and new Safety Data Sheets with new chemical hazard pictograms very soon. This Fact Sheet is intended to provide Fire and Building Code Officials information relative to the modified OSHA HCS and address the potential impacts to current fire code and standard requirements related to hazardous chemicals and materials in the built environment.

**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 (HCS)** and the chemical classification and labelling systems of other US agencies (i.e. the 16-section SDS format is similar to that of the format contained in the ANSI Z400.1/Z129.1 standard).

The result of this negotiation process is the document entitled "Globally Harmonized System of Classification and Labelling 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.

The following information is available from [OSHA's Hazard Communication website](https://www.osha-slc.gov/hazard-communication), located at OSHA's Website.

## **Hazard Communication Standard**

**In order 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 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 labells 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.
- **Labells:** Chemical manufacturers and importers will be required to provide a labell with all the required labell elements, including the product identifier, a harmonized signal word, pictogram(s), hazard statement and precautionary statements for each hazard class and category and the name, address and telephone number of the responsible party.
- **Safety Data Sheets:** (Formally called Material Safety Data Sheets) will now have a specified 16-section format.
- **Information and training:** Employers are required to train workers by December 1, 2013 on the new labell elements and safety data sheets format to facilitate recognition and understanding.

## ***Important information for Fire and Building Code Officials and Emergency Responders***

There are currently no changes proposed to the NFPA 704 standard with respect to the modified HCS.

Fire and Building Code Officials may need to require third-party technical expertise to determine the appropriate H Occupancy Classification when applying the International Building Code (IBC) and IFC or Tables 5003.1.1(1); 5003.1.1(2) or 5003.1.1(3) when applying the Maximum Allowable Quantities requirements.

Of note for both Code Officials and Emergency First Responders: The HCS 2012 Labelling and Markings, the IFC/NFPA 704 Markings, the Hazardous Material Information System (HIMS) and the DOT (Orange Emergency Response Guide) Labelling and Markings are all different systems that are not equal, nor are they transposable.

HCS Labelling and Markings is intended to ensure that the hazards of all chemicals produced or imported are classified, and that information concerning the classified hazards is transmitted to employers and employees. This is to address occupational exposure. [1910.1200](#) (The Hazardous Material Information System ([HMIS](#)) is the most commonly used example of this type of labelling.)

USDOT Emergency Response Guidebook labells and signs are intended for Initial Phase of a Dangerous Goods/Hazardous Materials Transportation Incident. [USDOT Guidebook](#) (Typically an open air incident)

The [NFPA 704](#) Marking System, as referenced by the IFC a, is used to regulate fixed facilities to address the health, flammability, instability, and related hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies NFPA 704 (This standard DOES NOT apply to transportation incidents, public use or occupational exposure).

The new Safety Data Sheets (SDS) format under Section 2 in the GHS Appendix D (Hazard Identification) does not include the NFPA 704 system as a required component of the section or the entire SDS. Some manufacturers may include the NFPA 704 rating system voluntarily, but since it isn't specifically listed in Appendix D of the HCS 2012 regulations, they are not required to do so.

This is critical for all disciplines (fire/building officials, emergency responders and chemical workers/transporters) to consider as the implementing of the new HCS 2012 training (or retraining) occurs in their respective agencies. Each system serves a different purpose. When considering the information they provide, it is important to utilize these different systems correctly in order to gain the full benefit of the information each provides in understanding chemical hazards.

### ***Areas of the 2012 International Fire Code (IFC) that may be impacted by the Modification of the OSHA Hazard Communication Standard***

There are no code change proposals submitted in the current ICC Group B code cycle to modify any of the following IFC sections with respect to the modified HCS (referred to as HCS 2012)

### **Current Requirements – 2102 International Fire Code**

#### **Definition (Chapter 2)**

**MATERIAL SAFETY DATA SHEET (MSDS).** Information concerning a hazardous material which is prepared in accordance with the provisions of DOL 29 CFR Part 1910.1200 or in accordance with the provisions of a federally approved state OSHA plan.

## **SECTION 407 HAZARD COMMUNICATION**

### **407.1 General.**

The provisions of Sections 407.2 through 407.7 shall be applicable where hazardous materials subject to permits under Section 5001.5 are located on the premises or where required by the fire code official.

### **407.2 Material Safety Data Sheets.**

Material Safety Data Sheets (MSDS) for all hazardous materials shall be either readily available on the premises as a paper copy, or where approved, shall be permitted to be readily retrievable by electronic access.

### **407.3 Identification.**

Individual containers of hazardous materials, cartons or packages shall be marked or labelled in accordance with applicable federal regulations. Buildings, rooms and spaces containing

hazardous materials shall be identified by hazard warning signs in accordance with Section 5003.5.

#### **407.4 Training.**

Persons responsible for the operation of areas in which hazardous materials are stored, dispensed, handled or used shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of a fire, leak or spill. Responsible persons shall be designated and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses and identification of the locations where hazardous materials are located, and shall have access to Material Safety Data Sheets and be knowledgeable in the site emergency response procedures.

#### **407.5 Hazardous Materials Inventory Statement.**

Where required by the fire code official, each application for a permit shall include a Hazardous Materials Inventory Statement (HMIS) in accordance with Section 5001.5.2.

#### **407.6 Hazardous Materials Management Plan.**

Where required by the fire code official, each application for a permit shall include a Hazardous Materials Management Plan (HMMP) in accordance with Section 5001.5.1. The fire code official is authorized to accept a similar plan required by other regulations.

#### **407.7 Facility closure plans.**

The permit holder or applicant shall submit to the fire code official a facility closure plan in accordance with Section 5001.6.3 to terminate storage, dispensing, handling or use of hazardous

## **Chapter 50**

#### **5003.4 Material Safety Data Sheets.**

Material Safety Data Sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by this chapter. When a hazardous substance is developed in a laboratory, available information shall be documented.

**Exception:** Designated hazardous waste.

#### **5003.3.1 Maximum allowable quantity per control area**

#### **5003.1.3 Quantities not exceeding the maximum allowable quantity per control area**

#### **5003.5 Hazard identification signs.**

Unless otherwise exempted by the fire code official, visible hazard identification signs as specified in NFPA 704 for the specific material contained shall be placed on stationary containers and above-ground tanks and at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit and at specific entrances and locations designated by the fire code official.

#### **5003.5.1 Markings.**

Individual containers, cartons or packages shall be conspicuously marked or labelled in an approved manner. Rooms or cabinets containing compressed gases shall be conspicuously labelled: COMPRESSED GAS.

### **5003.6 Signs.**

Signs and markings required by Sections 5003.5 and 5003.5.1 shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be approved.

#### **5001.2 Material classification.**

Hazardous materials are those chemicals or substances defined as such in this code. Definitions of hazardous materials shall apply to all hazardous materials, including those materials regulated elsewhere in this code.

#### **5001.2.1 Mixtures.**

Mixtures shall be classified in accordance with hazards of the mixture as a whole. Mixtures of hazardous materials shall be classified in accordance with nationally recognized reference standards; by an approved qualified organization, individual, or Material Safety Data Sheet (MSDS); or by other approved methods.

#### **5001.2.2 Hazard categories.**

Hazardous materials shall be classified according to hazard categories. The categories include materials regulated by this chapter and materials regulated elsewhere in this code.

##### **5001.2.2.1 Physical hazards.**

The material categories listed in this section are classified as physical hazards. A material with a primary classification as a physical hazard can also pose a health hazard.

1. Explosives and blasting agents.
2. Combustible liquids.
3. Flammable solids, liquids and gases.
4. Organic peroxide solids or liquids.
5. Oxidizer, solids or liquids.
6. Oxidizing gases.
7. Pyrophoric solids, liquids or gases.
8. Unstable (reactive) solids, liquids or gases.
9. Water-reactive materials solids or liquids.
10. Cryogenic fluids.

##### **5001.2.2.2 Health hazards.**

The material categories listed in this section are classified as health hazards. A material with a primary classification as a health hazard can also pose a physical hazard.

1. Highly toxic and toxic materials.
2. Corrosive materials.

*Supplemental Information from [OSHA's Hazard Communication website](#).  
(Frequently Asked Questions from the OISHA website included here for reader convenience)*

## **Modification of the Hazard Communication Standard (HCS) to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

### **Questions and Answers**

#### **Q. What is the Globally Harmonized System?**

A. 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 document entitled "Globally Harmonized System of Classification and Labelling 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.

#### **Q. Why did OSHA decide to modify the Hazard Communication Standard to adopt the GHS?**

A. 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, labells and safety data sheets may include symbols and hazard statements that are unfamiliar to readers or not well understood. Containers may be labelled with such a large volume of information that important statements are not easily recognized. Given the differences in hazard classification criteria, labells 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.

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

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

| Effective Completion Date                                       | Requirement(s)                                                                                                                                                                                   | Who                                                            |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| December 1, 2013                                                | Train employees on the new labell elements and safety data sheet (SDS) format.                                                                                                                   | Employers                                                      |
| June 1, 2015*<br>December 1, 2015                               | Compliance with all modified provisions of this final rule, except:<br><br>The Distributor shall not ship containers labelled by the chemical manufacturer or importer unless it is a GHS labell | Chemical manufacturers, importers, distributors and employers  |
| June 1, 2016                                                    | Update alternative workplace labelling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.                  | Employers                                                      |
| Transition Period to the effective completion dates noted above | May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both                                                                                                   | Chemical manufacturers, importers, distributors, and employers |

\*This date coincides with the EU implementation date for classification of mixtures

During the phase-in period, employers would be required to be in compliance with either the existing HCS or the revised HCS, or both. OSHA recognizes that hazard communication programs will go through a period of time where labells 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 labells and SDSs for compliance purposes.

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

A. OSHA is requiring that employees are trained on the new labell elements (i.e., pictograms, hazard statements, precautionary statements, and signal words) and SDS format by December 1, 2013, while full compliance with the final rule will begin in 2015. OSHA believes that American workplaces will soon begin to receive labells and SDSs that are consistent with the GHS, since many American and foreign chemical manufacturers have already begun to produce HazCom 2012/GHS-compliant labells and SDSs. It is important to ensure that when employees begin to see the new labells and SDSs in their workplaces, they will be familiar with them, understand how to use them, and access the information effectively. For more information, <http://www.osha.gov/dsg/hazcom/effectivedates.html>.

**Q. What are the major changes to the Hazard Communication Standard?**

A. The three major areas of change are in hazard classification, labells, 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 labells and safety data sheets are more accurate as a result.
- **Labells:** Chemical manufacturers and importers will be required to provide a labell 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.

The GHS does not include harmonized training provisions, but recognizes that training is essential to an effective hazard communication approach. The revised Hazard Communication Standard (HCS) requires that workers be re- trained within two years of the publication of the final rule to facilitate recognition and understanding of the new labells and safety data sheets.

For a side-by-side comparison of the current HCS and the final revised HCS please see OSHA's hazard communication safety and health topics webpage at:  
<http://www.osha.gov/dsg/hazcom/index.html>

#### **Q. What Hazard Communication Standard provisions are unchanged in the revised HCS?**

A. The revised Hazard Communication Standard (HCS) is a modification to the existing standard. The parts of the standard that did not relate to the GHS (such as the basic framework, scope, and exemptions) remained largely unchanged. There have been some modifications to terminology in order to align the revised HCS with language used in the GHS. For example, the term "hazard determination" has been changed to "hazard classification" and "material safety data sheet" was changed to "safety data sheet." OSHA stakeholders commented on this approach and found it to be appropriate.

#### **Q. How will chemical hazard evaluation change under the revised Hazard Communication Standard?**

A. Under both the current Hazard Communication Standard (HCS) and the revised HCS, an evaluation of chemical hazards must be performed considering the available scientific evidence concerning such hazards. Under the current HCS, the hazard determination provisions have definitions of hazard and the evaluator determines whether or not the data on a chemical meet those definitions. It is a performance-oriented approach that provides parameters for the evaluation, but not specific, detailed criteria. The hazard classification approach in the revised HCS is quite different. The revised HCS has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures or substances are covered. It also establishes both hazard classes and hazard categories—for most of the effects; the classes are divided into categories that reflect the relative severity of the effect. The current HCS does not include categories for most of the health hazards covered, so this new approach provides additional information that can be related to the appropriate response to address the hazard. OSHA has included the general provisions for hazard classification in paragraph (d) of the revised rule, and added extensive appendixes (Appendixes A and B) that address the criteria for each health or physical effect.

## Q. How will labels change under the revised Hazard Communication Standard?

**Note – This answer ONLY provides the additional elements for the label. The label has always required the product identifier (formerly identify) and the name, address, and telephone number.**

A. 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.

## Q. What pictograms are required in the revised Hazard Communication Standard? What hazard does each identify?

A. 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                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                        |                                                   |
| <ul style="list-style-type: none"><li>• Carcinogen</li><li>• Mutagenicity</li><li>• Reproductive Toxicity</li></ul> | <ul style="list-style-type: none"><li>• Flammables</li><li>• Pyrophorics</li><li>• Self-Heating</li></ul> | <ul style="list-style-type: none"><li>• Irritant (skin and eye)</li><li>• Skin Sensitizer</li><li>• Acute Toxicity (harmful)</li></ul> |

|                                                                                                                                            |                                                                                                                                |                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul> | <ul style="list-style-type: none"> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul> | <ul style="list-style-type: none"> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non Mandatory)</li> </ul> |
| <b>Gas Cylinder</b><br>                                   | <b>Corrosion</b><br>                          | <b>Exploding Bomb</b><br>                                                   |
| <ul style="list-style-type: none"> <li>• Gases under Pressure</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul> | <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>                                          |
| <b>Flame over Circle</b><br>                              | <b>Environment (Non Mandatory)</b><br>        | <b>Skull and Crossbones</b><br>                                             |
| <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>                                                                              | <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>                                                           | <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>                                                                            |

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

A. 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.

**Q. Will OSHA allow blank red borders?**

A. 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.

**Q. When must label information be updated?**

A. 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.

**Q. How will workplace labelling provisions be changing under the revised Hazard Communication Standard?**

A. 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.

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

A. The information required on the safety data sheet (SDS) will remain essentially the same as that in the current standard (HazCom 1994). HazCom 1994 indicates what information has to be included on an SDS, but does not specify a format for presentation or order of information. The revised Hazard Communication Standard (HazCom 2012) requires that the information on the SDS be presented using specific headings in a specified sequence.

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

The SDS must also contain Sections 12-15, to be consistent with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Although the headings for Sections 12-15 are mandatory, OSHA will not enforce the content of these four sections because these sections are within other agencies' jurisdictions.

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

A. 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.

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

A. 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.

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

A. 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.

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

A. 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).

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

A. 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 labells and SDSs. OSHA has provided labell 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 labelled where appropriate, and be addressed on SDSs. OSHA has provided labell 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. 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 labells and SDSs. Labell 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 labelling requirements. The manufacturer or importer may transmit the labell to the customer at the time of the initial shipment, but the labell 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.

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

A: 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.

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

A: 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 labells 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 labells for hazardous chemicals in color.

**Q: What are the estimated benefits attributable to the revised Hazard Communication Standard?**

A: 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 labelling 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 labells, 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 labells and SDSs. (3) for firms engaging in, or considering engaging in, international trade.