OSHA Hazard Communication Program

For the

Ball State University Campus
Muncie, Indiana 47306

October 2013 (with GHS Revisions)

Prepared by the

Environmental Health and Safety Office
North Service Building
Ball State University
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Title: Hazard Communication Program

Applies to: Ball State University  Date Issued: July 2011  Date Revised: October 2013  Next Review Date: October 2014

Purpose

Purpose of This Program

The Ball State University Hazard Communication (HCS, or HazCom) Program is designed to:

- Inform Ball State University (BSU) employees of the hazards associated with chemicals in the workplace;
- Ensure the proper identification, safe use, handling, and disposal of hazardous chemicals in the workplace;
- Comply with the Occupational Safety and Health Administrations' (OSHA) Hazard Communication Standard, 29 CFR 1910.1200, (HCS, or HazCom) as well as Ball State University health, safety, and environmental policies; and,
- Provide a single, yet flexible, Hazard Communication Program that will minimize potential incidents of chemical exposure illnesses or injuries across the University.

Definitions

Refer to Appendix A: Glossary of Terms and Acronyms.

The Glossary in Appendix A contains terms directly from either, or both, the 1994 and 2012 OSHA Hazard Communication Standards, as well as other health, toxicology, and physical state definitions to aid in the understanding of OSHA’s health and physical classifications, labels, and (Material) Safety Data Sheets.

Regulatory References

The relevant regulations may be found at: 29 CFR 1910.1200, OSHA’s Hazard Communication Standard. At present, the OSHA HazCom system is in a transition period between earlier revisions in 1994 (1994 HazCom) and the recent amendments (2012 HazCom) incorporating revised hazard classifications, labeling standards, and Safety Data Sheet formats designed to be compatible with international standards.
Original OSHA HazCom Standard:

According to OSHA, the purpose of the Hazard Communication Standard (HCS, or HazCom) is “to ensure that the hazards of all chemicals produced or imported are evaluated and details regarding their hazards are transmitted to employers and employees.” The premise behind HCS is that employers and employees have the right to know the hazards and identities of the chemicals they are exposed to and what precautions they can take to protect themselves. Since the advent of HazCom in the 1980s, this has been accomplished by requiring manufacturers to provide health and physical data on their chemical products in the form of Material Safety Data Sheets, identity and warning information on labels, and training of those employees handling or exposed to chemicals in the workplace of the hazards presented, and the appropriate protective measures. The original HazCom system was largely “performance” based rather than “prescriptive” as to the form and substance of the hazard communications to be conveyed in the safety data sheets and labels. The earlier OSHA Standard will be referred to as the 1994 HazCom as that was the most recent major revision of the Standard.

Recent GHS Revisions to the HazCom Standard:

The Globally Harmonized System (GHS) is an international approach to hazard communication, providing internationally agreed-upon criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets. OSHA, as of 2012, has now modified its Hazard Communication Standard (HCS) to adopt the GHS. Since it was originally promulgated in 1983, the HCS has provided employers and employees extensive information about the chemicals in their workplaces. The original standard is performance-oriented, however, allowing chemical manufacturers and importers to convey information on labels and material safety data sheets in pretty much whatever format they choose. The more standardized approach to classifying the hazards and conveying the information, provided by the GHS, is intended to be more effective, and provide further improvements in American workplace safety. The GHS includes detailed criteria for determining what hazardous effects a chemical poses, as well as standardized label elements assigned by hazard class and category. The harmonized format of the Safety Data Sheets (formerly Material Safety Data Sheets) will also enable employers, workers, health professionals, and emergency responders to access the information more efficiently and effectively, thus increasing their utility.

This update to Ball State University’s written Hazard Communication Plan addresses both the earlier 1994 Hazard Communication Standard (1994 HazCom), as well as the revisions made in the 2012 regulatory amendments to that OSHA regulation (2012 HazCom) which incorporated provisions of the GHS. Accordingly, some dual
compliance systems are included in this Plan for the “transition” period affecting Hazard Classes, Material Safety Data Sheets/Safety Data Sheets, and Labels.

The three major areas of change to the HazCom Standard under the 2012 HazCom GHS revisions are as follows:

1. **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.

2. **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.

3. **Safety Data Sheets (SDSs)**: Formerly known as Material Safety Data Sheets (MSDSs) will now have a specified 16-section format and content and called just *Safety Data Sheets*.

In addition, the 2012 HazCom Standard requires that all affected employees be trained in the new label and Safety Data Sheet formats and content by December 1, 2013. A copy of the 1994 Hazard Communication Standard is provided as Appendix B1 to this Hazard Communication Plan, while a copy of the Standard with the 2012 GHS amendments is provided in Appendix B2. The GHS implementation timeline mandated in the 2012 amendments are summarized below:

**Timeline for GHS (2012 HazCom) Implementation**

<table>
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<tr>
<th>Effective Completion Dates</th>
<th>Requirement(s)</th>
<th>Who Must Comply?</th>
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<tr>
<td>December 1, 2013</td>
<td>By this date, employers must train employees on how to read GHS formatted labels and SDSs. Changes to labels are probably more substantial, however, employees need to understand where to find information on the SDS, especially in section 2 where critical hazard information is located.</td>
<td>Employers</td>
</tr>
<tr>
<td>June 1, 2015</td>
<td>By this date, chemical manufacturers and distributors should have completed their reclassification of chemicals and be shipping GHS formatted SDSs and labels with their shipments. By this time too, a majority of your library will have turned over.</td>
<td>Chemical manufacturers, importers, distributors, and employers</td>
</tr>
<tr>
<td>December 1, 2015</td>
<td>Distributors have an additional 6 months beyond the June 1, 2015 date to pass along manufacturer labels and SDSs in the older formats. However, beyond December 1, 2015, all SDSs and labels in the U.S. should adhere to HazCom 2012 provisions.</td>
<td>Employers</td>
</tr>
</tbody>
</table>
Effective Completion Dates | Requirement(s)                                                                                                                                                                                                 | Who Must Comply?
---|---|---
June 1, 2016 | By this date employers should be fully compliant with HazCom 2012. That includes making any necessary updates to their HazCom program, training employees on any newly identified chemical hazards (identification of new hazards is likely during the reclassification process chemical manufacturers undertake), and updating safety data sheets libraries and secondary labels. | Employers
Transition Period to the effective compliance dates noted above | May comply with either 29 CFR 1010.1200 Standard: the 2012 HazCom, the 1994 HazCom Standard, or both, during this implementation period. | Chemical manufacturers, importers, distributors, and employers

Scope of the Hazard Communication Program

This program applies to:

- All Departments at BSU which use or store chemicals; and,
- All chemicals used by BSU employees under normal conditions of work or in foreseeable emergencies or spill incidents.
- All hazardous chemicals known to be present in such a manner or place that employees may be exposed under normal conditions of their use or in a foreseeable emergency in Ball State University operations and facilities collectively referred to throughout this document as BSU, the University or Campus.

EXCEPTIONS:

This program does not apply to academic and research laboratories to the extent that chemical identification, handling, labeling, and hazard information is provided under other OSHA programs. Laboratory facilities on the Campus are subject to the Chemical Hygiene Plan requirements under 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories (the OSHA Laboratory Standard). However, training under the HazCom Standard may substitute for, or supplement, the specific training under the OSHA Laboratory Standard specific to laboratory worker training, chemical identification, labeling, and Safety Data Sheet accessibility. For more information in this regard, contact the Environmental, Health, and Safety Office, or the BSU Chemical Hygiene Officer.

Exemptions

There are a number of program exemptions, or labeling exceptions, under the OSHA Hazard Communication Standard. Following are some of the items and chemicals not covered by these regulations or the BSU Hazard Communication Program:
Any consumer products or hazardous chemicals that are used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure that is not greater than exposures experienced by consumers (normally this means the product is in consumer size, dispensing and packaging style).

Office workers who encounter hazardous chemicals only in isolated instances are not covered by the rule. OSHA considers most office products (such as pens, pencils, adhesive tape) to be exempt under the provisions of the rule, either as articles or as consumer products. For example, OSHA has previously stated that intermittent or occasional use of a copying machine does not result in coverage under the rule. However, if an employee handles the chemicals to service the machine, or operates it for long periods of time, then the program would have to be applied.

In work operations where employees only handle chemicals in sealed containers that are not opened under normal conditions of use and handling (i.e., shipping and receiving, warehousing) if the following practices are followed:
   o The labels on incoming containers of hazardous chemicals are not removed or defaced;
   o Copies of any MSDSs received with the incoming shipments are maintained; and,
   o Employees are provided with information and training to ensure their protection in the event of a spill or leak of a hazardous chemical from a sealed container.

Hazardous wastes;

TSCA and FIFRA regulated substances (pesticides, PCBs) which include their own label requirements.

Prescription, and over the counter drugs, or cosmetics intended for legal use by employees;

Pipes and piping systems or those labeled in accordance with any BSU Pipe Identification Plan;

Products that are required to be labeled under other standards or regulations (pesticides, foods, food additives, alcoholic beverages);

Articles (as defined in the OSHA standard and this Program – “manufactured items” that are not likely to result in exposure of employees to any chemical physical or health hazards)

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**Program Administration and Responsibilities**

The **Ball State University Environmental, Health, and Safety (EHS) Office** will administer and provide oversight for this program on behalf of the University. Contact Tom Russell, Environmental Specialist, (285-2807 or tlrussell@bsu.edu) in that regard. These are the EHS Office responsibilities:

1. Develop, implement, and maintain this Program;
2. Develop, deliver, arrange, or assist the Departments with preparing plans, proper labeling, and providing training covered in this Program;
3. Assist BSU Departments in implementing and complying with this Program and provide additional guidance regarding hazardous materials and safety procedures within the scope of this Program;
4. Review and revise this program as needed;
5. Maintain a repository for outdated MSDSs/SDSs in conformance with OSHA’s other employee exposure recordkeeping requirements; and,
6. Audit the various University Departments for compliance with this program.

For assistance with program implementation, MSDSs/SDSs, container labels, or training, contact the University Environmental, Health, and Safety Office at the following number: 765-285-2807 or via email at tlrussell@bsu.edu (Environmental Specialist/Chemical Hygiene Officer).

The individual **Ball State University Departments** with employees subject to the OSHA Hazard Communication Program are required to designate a **Departmental HCP (or HazCom) Administrator** to implement this Program within their individual Departments, offices, or shops. This is a “pass through” program, in that each Department is responsible for implementing this HCP within their own Department and to their own personnel – faculty and staff. The large number of employees and administrative units or departments within BSU, as well as the variety of hazardous chemicals handled, necessitate that each Department or administrative unit maintain compliance within their physical domains and personnel responsibilities. In particular, the employee training needs, requirements for (Material) Safety Data Sheet maintenance and prompt availability to staff, as well as the container labeling standards, are too extensive and location-specific to be implemented at a University-wide level. The EHS Office, however, will endeavor to provide whatever support, information and materials necessary to the various departments, shops, laboratories, and administrative units in order to ensure an effective and beneficial Hazard Communication compliance program.

Each Department or administrative unit with employees and activities subject to the HazCom Standard must maintain a copy of this Plan, accessible to all employees upon request, either in hardcopy or electronic form, and designate their Program Manager below:

**Hazard Communication Program: Designated Departmental Administrator**

**Administrator:** ___________________________ **Phone:** ____________

**Department:** ___________________________ **Email:** ____________

Each of the University Departments subject to this Hazard Communication Program is also to complete the form provided in **Appendix C** designating the Department’s HCP Administrator, maintain one copy with this written Program, and return one (1) copy to the Ball State University Environmental, Health, and Safety Office at the following location:

**Environmental Health and Safety Office**
**Ball State University**
**North Service Building**
**3401 North Tillotson Avenue**
**Muncie, Indiana 47306**
**Email:** tlrussell@bsu.edu
The **Departmental HCP Administrator** will carry out the following responsibilities:

1. Inform Department employees of the location of a copy of this program, the chemical inventory list (**Appendix D** of this Plan), and the location of the MSDSs/SDSs for all hazardous chemicals used in the Department. Ensure these documents are always accessible to staff;
2. Continually ensure that there is an MSDS/SDS present for each hazardous chemical in the Department and that all are on the Department’s chemical inventory list;
3. Make the MSDS/SDS files readily accessible during each work shift to all employees working in the Department or a particular area;
4. Remove outdated or replaced MSDS/SDSs from the current MSDS/SDS binder and or location, but retain them either in the Department files (or send to the EHS Office for archiving) for compliance with OSHA’s separate employee exposure recordkeeping regulation;
5. Ensure that each primary and secondary container in the Department is properly labeled;
6. Conduct, or arrange training programs through the EHS Office, for all affected employees and ensure their understanding of the HazCom program. Maintain records required under this program;
7. Exchange MSDSs/SDSs and any other required hazard information with any potentially affected contractors prior to construction and renovation projects. Ensure contractor compliance during such projects;
8. Engage and train students who may be handling or exposed to hazardous chemicals with the same level of awareness of chemical hazard identification, safety, and exposure controls as that afforded to employees under this Hazard Communication program; and,
9. Review the written program, MSDS/SDSs, inventory list, labels, and training records annually. Make changes according to guidance from the EHS Office, or as new information becomes available.

The various elements of each of these tasks are presented in more detail in the following Sections of this HazCom program.

**OSHA Hazard Classifications**

The classifications of health and physical hazards differ between the earlier 1994 HazCom Standard and the 2012 GHS revised Hazard Communication Standard. The 1994 system included the following classes:
Under the 2012 GHS Hazard Communication Standard, the following are the Physical and Health Hazard Classes:

2012 GHS
Hazard Classes
(2012 HazCom)
Appendix F to this Plan provides more detail, descriptions, or definitions as to the above health and physical hazard classes established by the 2012 GHS Hazard Communication revisions. In many cases, there are a number of “Hazard Categories” within each of the Hazard Classes. These categories further define the extent or severity of the health or physical hazard within the various classes.

**Chemical Inventory List**

In Appendix D of this program is a blank *Chemical Inventory List Form*. All chemicals being used in every Department and for which there is an MSDS/SDS in the binder are to be listed on this, or another, inventory form kept at this location. The completed, current Inventory List is to reside in the MSDS/SDS binder kept in the Department in a readily accessible location that is known to all employees. As an alternative, the Department may print out a chemical inventory listing from the University’s ChemTracker chemical inventory system if the Department is participating in that inventory program. Regardless, a current listing of all hazardous chemicals or products containing hazardous chemicals that are present in the workplace, lab, shop, or studio, must be maintained with this Program.

**Procedure for Maintaining the Inventory List**

1. When a new or reformulated chemical product is received at this department, retrieve the Hazard Communication Program binder;
2. Check the Inventory List for the name of the chemical product as it appears on
the container label or the MSDS or SDS accompanying the shipment; and,
3. If the product is not listed, add it to the list;
4. If the new product replaces a product and the supply of that product has
   been depleted, remove or redact the former product from the Inventory List;
5. Either maintain the outdated MSDS/SDS in the Department files, or send it
to the BSU EHS Office for archiving to comply with other OSHA standards.
6. While not required for exempt products as identified earlier, it is acceptable
to include those materials if so desired.

The 2012 GHS amendments to the OSHA *Hazard Communication Standard* include changes to what
have been known as the Material Safety Data Sheets (MSDS) that; henceforth, will be called simply
Safety Data Sheets (SDS) as the revised regulation is implemented. The particular changes to
format that comprise the SDSs will be presented following the MSDS description below from the

An MSDS (or, in the future, the newer SDS) must be kept on file for all chemicals on the Inventory
list, with the accuracy and completeness of the Inventory list being assured at all times. These
documents (MSDS/SDSs) are designed to provide the information to employees needed to handle
chemicals safely.

**Material Safety Data Sheets (MSDS) Contents**

*1994 HazCom*

MSDS’s under the 1994 HazCom Standard often differ somewhat in format and content; however, all
were required to contain the following:

1. *Substance identification* – names, synonyms, manufacturer contact
   information, and CAS (Chemical Abstract Service) index numbers;
2. *List of active and inert ingredients* – concentration of components.
3. *Exposure limits* – ACGIH, TLV, OSHA PEL, etc;
4. *Physical data* – boiling, melting points, vapor pressure, evaporation rate,
specific gravity or density, water solubility, physical description;
5. *Fire and explosion data* – LEL, flashpoint, flammability, class of hazardous
   atmosphere, firefighting media and methods, including fire extinguishers,
6. Transportation requirements, if any;
7. Toxicity and health hazard data – including target organ, specific acute and chronic health effects, potential cancer risk, first aid and emergency medicine;
8. Storage and disposal – including reporting requirements;
9. Spill and emergency response procedures; and,
10. Measures to protect employees including personal protective equipment, safety shower and eyewash, etc.

As noted previously, the content and location of information in MSDSs was fairly flexible under the earlier HazCom standard. You should first contact the supplier if an MSDS appears to be inadequate, illegible, out-of-date, or incomplete. If this attempt is not successful, please contact your Department’s HCP Administrator, or the EHS Office, to investigate or obtain the required MSDS/SDS.

**Safety Data Sheet (SDS) Information 2012 HazCom**

The information required on the Safety Data Sheets (SDSs) will be similar to that in the current standard (1994 HazCom) for Material Safety Data Sheets (MSDSs). However, while HazCom 1994 indicated what information had to be included on an MSDS, it did not specify a format for presentation or prescribe the order of information. The revised Hazard Communication Standard (GHS HazCom 2012) requires that the information on the SDS be presented using specific headings in a specified sequence. The new SDSs will, of course, also contain the new hazard classifications under the 2012 HazCom Standard, pictograms, expanded label information, and other features not included in the former 1994 HazCom Standard.

The final 2012 HazCom GHS rulemaking provides the Section headings of information to be included on the SDS, and the order in which they are to be provided. In addition, the 2012 GHS standard provides the specific information to be included under each heading. The SDS format is similar to the American National Standards Institute (ANSI) standard format which has already been informally used in the U.S. for MSDSs by many manufacturers in recent years, and may already be familiar to many employees. However, there are a few differences. For the most part, and for most employees, the most important Sections are Section 1 (so you know you have the right chemical), and Sections 4, 5, and 6 so that you know what to do in case of an emergency.

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
The SDS must also contain Sections 12-15, to be consistent with the United Nations' Globally Harmonized System of Classification and Labeling 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.

The specific information and data to be provided within each of the SDS Sections is related in Appendix G to this written Program.

The newer SDSs can often be readily differentiated from the earlier MSDSs by three visual means:

1. A **Safety Data Sheet** heading as opposed to **Material Safety Data Sheet** heading on the document;
2. The presence of 16 sections to the document in the order listed above (though the ANSI format used by many manufacturers also had 16 sections); and,
3. The presence of **Pictograms** as will be described in the following discussion.
The handling and distribution of the new SDSs required under the 2012 GHS revisions will continue as has been the case for MSDSs previously, that being performed by all Departments or units using hazardous chemicals in manners that are regulated under the HazCom Standard.

**Procedure for Maintaining (Material) Safety Data Sheets (MSDSS or SDSs)**

1. Obtain and label one or more three ring binders and label “MSDSs” and/or “SDSs”. Place all old (if still on the premises) and new MSDSs or SDSs in the binder(s).
2. File MSDS/SDSs alphabetically or by use, hazard class, location, or other suitable category (this should already have been done by all Departments). The system should be designed for ease of employee location of the needed MSDS/SDS.
3. Inform all employees of the location and availability of the SDS/MSDS binder or means of electronic access to the MSDSs.
4. When a new or reformulated chemical product (a hazardous chemical or product containing a hazardous chemical) is received at the Department, it should be accompanied by a new (Material) Safety Data Sheet. Check all deliveries of chemicals for the MSDS/SDS(s). An MSDS/SDS should accompany the first shipment of all new or re-formulated chemicals.
5. If a chemical is received without an SDS/MSDS, check the SDS/MSDS binder and chemical inventory list to determine if it does already, or should, contain the SDS/MSDS. If not, immediately request one from the supplier. Store the chemical separately, label “DO NOT USE” and do not use the chemical or product until the MSDS or new SDS is received and made available to employees.
6. As manufacturers/importers create or modify new SDSs to replace the former MSDSs for their chemical products in accordance with the implementation timeframes for the GHS amendments, these new forms will be provided with new orders, or as replacements for the outdated MSDSs. All Departments should be aware of, and on the lookout for, the replacement or new SDSs.
7. When a chemical is received with a new or replacement SDS/MSDS, place it in the binder and add the product name to the Chemical Inventory List. Remove any old or out-of-date MSDS/SDS for the same or similar product that is no longer in stock.
8. Also, take this opportunity to check the Inventory List for the name of the chemical product as it appears on the new or revised MSDS or SDS accompanying the shipment; and, if the product is not listed there, add it to the list.
9. While not required for those exempt products identified earlier, it is acceptable to include any MSDS/SDSs for those materials if so desired.
10. The MSDSs may be stored electronically; but, if so, the system must be readily available to the employees during all work shifts and the employees must be trained and capable of accessing the MSDS/SDSs at all times.
11. If MSDS/SDSs become obsolete by product replacement, or by a new SDSs being supplied, you should remove that document from the current binder or location but either maintain it in the Department’s archives, or send it to the EHS Office to be archived. Possible employee exposure information must be maintained for the duration of an employee’s employment, plus 30 years in accordance with OSHA regulations.
12. Any MSDSs/SDSs being archived should be annotated with the period of its availability and usage in the Department.
**MSDS/SDS Distribution**

1. The Department HCP Administrator shall ensure that new or revised SDSs/MSDSs are appropriately filed in the SDS/MSDS notebook(s) or repository in their Department or area;

2. If the SDS/MSDS are not readily available in hardcopy in a visual location to employees in the workplace, they must be promptly available in an electronic format. Ready access to such electronically stored documents in the workplace must be provided, as well as employee knowledge how to locate and review the pertinent SDS/MSDSs, throughout the work period.

3. SDS/MSDS files relevant to employees traveling between multiple workplaces shall be maintained at their primary workplace facility (their office, shop, lab, studio, tool storage area, or time clock location).

**Labeling**

Under the current *Hazard Communication Standard* (1994 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 (2012 GHS), once the hazard classification is completed, the standard specifies what information is to be provided for each hazard class and category.

**1994 HazCom Primary Container Label Contents**

Labels on all **primary containers** (as received from the manufacturer/distributor) had to include only the following:

1. The **identity of the chemical** – common name &/or chemical name.
2. A **hazard warning** – such as "Caution, Warning, Flammable, Toxic", etc.
3. The name and address of the **manufacturer**.
The 2012 GHS HazCom Standard requires chemical manufacturers and importers to provide an expanded label that includes a harmonized (1) product identifier, (2) signal word, (3) hazard statement, (4) precautionary statement, (5) supplier identification, and (6) pictogram, for each hazard class and category. An example containing the required elements follows:
(1) **Product Identifier** is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in Section 1 of the SDS.

(2) The labels must have a **Signal Word**, **DANGER**, or **WARNING** (not both), denoting the relative hazards of the chemical or material – **DANGER** being for the more severe hazards, while **WARNING** is for the less severe hazards - be they physical or health hazards.

(3) **Hazard Statements** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it. All of the applicable hazard statements must appear on the label.

(4) **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of
precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure emergency response, and first-aid); storage; and disposal.

(5) **Supplier Identification:** Name, Address and Telephone Number of the chemical manufacturer, importer, or other responsible party

(6) Perhaps the most apparent new required feature for primary labels are the **Pictograms** (there are nine) which are illustrated below, along with the health or physical hazards that they represent. The pertinent pictograms are to be prominently displayed on the primary container label along with the other five required elements.
In reality, the only two completely new labels (pictograms) above, when compared to the U.S. DOT labeling system, with which many employees are already familiar, are the HEALTH HAZARD AND EXCLAMATION MARK noting serious and less serious (normally reversible) health effects, respectively.

**Primary Container Label Procedure**

1. When chemicals are received, check all containers to ensure that the product label meets the requirements outlined above.
2. Either type of label, 1994 HazCom or 2012 GHS HazCom labels as described above, may be accepted until December 1, 2015, at which time all manufacturers/distributors are to ship products only with the new label types.
3. Ball State University may continue using either type of label during a transition period up to June 1, 2016. After that time, all labels in use should meet the 2012 GHS label standards.
4. With each chemical shipment the purchasing agent or his/her designee will check all containers to ensure that the condition is safe and that all labels meet the requirements outlined in this program. Ball State University will not accept unsafe containers or improperly labeled containers.
5. The primary container label shall not be removed, covered, defaced, or otherwise rendered illegible. If removed or damaged, the label must be replaced with a new label or information identical to that which was displayed on the original label.

**Secondary Container Label Procedure**

A secondary container is any container other than the one in which the chemical was originally received from the supplier. Secondary container labels must contain the same information as labels for primary containers. All labeling information can be obtained from the original container, or the MSDS for the product. Label secondary containers whenever:

1. More than one employee uses the container;
2. The container is used longer than one shift or left unattended in the work area;
3. Labels on containers not containing original product will be removed and relabeled;
4. Any portable containers used to store, transport or transfer chemicals which hold a sufficient amount to present a physical or health hazard must be labeled.

It is not necessary to label the secondary container – if:

1. One employee uses the chemical without exposing others;
2. The employee returns the contents to the original container at the end of their shift, when no longer using the chemical, or if disposing of the empty container; and,
3. If questioned, the employee can identify the container contents and the hazards associated with the product.

**Types of Secondary Labels**
*(1994 HazCom)*

For compliance with the 1994 HazCom Standard, the University may continue using the National Fire Protection Association (NFPA) or Hazardous Material Information System (HMIS) to label secondary containers. It is important to note though that the common name of the chemical or chemical product must also appear on the container, in addition to the information conveyed by these secondary labels.

Both the NFPA and HMIS systems include numerical ratings for the acute health, flammability and reactivity hazards of a chemical or product. The HMIS includes a personal protective equipment (PPE) index, and the designation of chronic health hazards. Most MSDSs (and SDSs) contain the numerical designations appropriate for one or both of these types of labels, though it is not required by OSHA that such information be on those forms.

The nature and degree of these hazard classes is shown on the following label pictures for each label type (NFPA and HMIS):
However, these labels have certain deficiencies that may discourage communication of all the necessary information for particular chemicals:

(1) They may not exhibit chronic health information (NFPA);
(2) They do not always have a space for the required chemical or product name;
(3) They do not convey target organ identity; and,
(4) They lack chemical-specific hazard warnings and precautions.

**Types of Secondary Labels**
*(2012 HazCom)*
Or, it may be possible to use the NFPA or HMIS labeling system, though additional product identity and hazard warnings may be necessary (e.g., target organs). Please also be aware of the reverse numerical hazard severity rating system between the GHS and NFPA/HMIS systems as noted below:

It is important to note that the HMIS/NFPA hazard numbers should be used if using those labels for the secondary containers—the GHS system's numerical hazard rating (which is the opposite of the NFPA/HMIS ratings) normally just appears on the SDS for the chemical product.
Commercially Available GHS Labels as on the left will be made available by the EHS Office as the GHS standard is implemented. The relevant warning words and pictograms are denoted by checking (or circling) the correct boxes with a permanent marker. Note this system includes target organs and PPE.

Reference chart for use of the above secondary container labels – note the red PHYSICAL HAZARDS section is for Flammable Only. Other physical hazards will go under the Orange section. The Environmental Hazard pictogram is not included on these labels as that is not an OSHA requirement. The Corrosive Material pictogram can be either a health or physical hazard, or both.
Ball State will be moving toward the system immediately above as the GHS transition moves forward. This system simplifies the required secondary container labeling system by essentially duplicating the information that should be available on the container label and/or SDS. It also clearly displays the pictograms and any target organs of concern with use of the chemical.

**Other Label Notes**

1. If you have unlabeled or unidentified containers with chemicals, please contact your Departmental HCP Administrator or the EHS Office for assistance. DO NOT bring chemicals onto BSU property from outside sources for personal use.

2. Employees are not to use or handle hazardous chemicals that are not properly labeled, for which a SDS/MSDS is not available, or which presents hazards for which the employee has not been trained. The Departmental HCP Administrator or the EHS Office should be contacted if such a situation arises.

Additional information provided by OSHA on the required elements of a GHS compliant label, and the new pictograms, is provided in Attachment H to this Program.

**Exposure Incidents**

Follow the directions on the container or in the SDS/MSDS for the actions or precautions to be taken in the event of an exposure to a particular chemical substance.

If an employee is exposed to a chemical and the exposure results in an injury or illness that requires treatment by medical personnel:

1. Ensure that medical personnel see the individual immediately;
2. Provide a copy of the SDS/MSDS to the medical personnel involved. Along with the SDS/MSDS provide any additional information you have on the chemical and when, where, and how it was used, and how the exposure occurred.
3. Notify the EHS Office so that the incident can be investigated, and any necessary spill control quickly undertaken.

**Training**

**Training Matrix**

Use this table to determine training requirements. These requirements apply to all employees who will use hazardous chemicals in the course of their job duties. Please contact the EHS Office for assistance with your training needs. A narrated Powerpoint presentation has been made available to all departments and employees to both review the basic HazCom Standard, as well as the new OSHA GHS Hazard Classifications, Safety Data Sheets, and label elements.
<table>
<thead>
<tr>
<th>When</th>
<th>Content</th>
<th>Training methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initially, prior to assignment to work</td>
<td>1. Details of this program;</td>
<td>- Classroom type training.</td>
</tr>
<tr>
<td></td>
<td>2. OSHA requirements;</td>
<td>- Video, other AV and interactive media</td>
</tr>
<tr>
<td></td>
<td>3. Physical and health hazards of exposure to hazardous chemicals;</td>
<td>- A walkthrough showing chemical storage areas and labels</td>
</tr>
<tr>
<td></td>
<td>4. How to use SDSs/MSDSs, labels (and other warnings if any);</td>
<td>- Demonstrations</td>
</tr>
<tr>
<td></td>
<td>5. Location of SDSs/MSDSs, inventory list and copies of this program;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. How to detect presence or release of hazardous chemicals;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Responding to incidental spills; and,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Measures to protect employees including safe work practices, PPE, and emergency procedures</td>
<td></td>
</tr>
<tr>
<td>Upon introduction of new hazards, (new chemicals, new tasks, etc.)</td>
<td>1. Physical, health hazards of exposure to the hazardous chemical</td>
<td>Safety meeting, job, facility or task orientation</td>
</tr>
<tr>
<td></td>
<td>2. Measures to protect employees including safe work practices, PPE, and emergency procedures</td>
<td></td>
</tr>
<tr>
<td>December 1, 2013</td>
<td>1. Train employees on the new label elements, pictograms, etc.</td>
<td>PowerPoint or videos</td>
</tr>
<tr>
<td></td>
<td>2. Train employees on the new Safety Data Sheet (SDS) format and contents</td>
<td></td>
</tr>
<tr>
<td>June 1, 2016</td>
<td>Provide additional employee training on any newly identified safety and health hazards or alternative workplace labeling systems</td>
<td>PowerPoint, videos, or safety meetings</td>
</tr>
<tr>
<td>Upon assignment to non-routine tasks</td>
<td>1. Physical, health hazards of exposure to hazardous chemicals</td>
<td>Safety meeting, or could include a walkthrough and task orientation and training by supervisor or EHS Office on chemicals to be used.</td>
</tr>
<tr>
<td></td>
<td>2. Measures to protect employees including safe work practices, PPE, and emergency procedures</td>
<td></td>
</tr>
</tbody>
</table>
Keep these training records for all of your Department Staff:

1. Date of training.
2. Name and job title of trainer.
3. Names of the trainees.
4. Training topics.
5. Other pertinent information to substantiate the training

Note: Please see the Training Record Forms in Appendix E.

Non-Routine Tasks and Spill Response

Non-Routine Tasks

Non-Routine tasks do not occur on a frequent basis or as a normal part of employee’s work. Before starting non-routine tasks, the Department administrator, HCP Administrator, supervisor, or work group leader must discuss with Department personnel any potential chemical hazards they may encounter and the safe work practices and/or equipment that should be employed. Contact the ESH office for assistance with the evaluation of the hazards of non-routine work. Training may be required for some tasks (confined space entry, excavations, etc.), activities (hot work), or necessary equipment (respirators, fall protection).

Spill Response

Spill Response: Refer to the EHS Office Spill Response Guide for assistance. An employee should only clean up incidental spills in his work area for which he or she has been trained under this Hazard Communication Program, and for which the necessary personal protective equipment and response equipment is available.

If such is not the case, or there is a major spill:

1. Evacuate the building or vicinity;
2. Call the University Police at 5-1111, or call 911 and give details of the incident, including any injuries, the location, and the identity of the hazardous material released; and,
3. Contact the EHS Office at 285-2807, or through Work Control at 5-5081, immediately after notifying emergency authorities.

Considerations for Spill or chemical exposure response are summarized on the following to pages.
BSU SPILL RESPONSE PROCEDURES

REMEMBER: DO FIRST AID FIRST, THEN ASSESS THE SPILL – Is the Spill Major or Minor?

Minor Spill - Definition
If Department, shop, lab, or local staff have the training, protective equipment, and spill response supplies to control and cleanup the release, and the spill is:

- Less than 1 gallon spill of a low toxicity chemical
- Less than 1/2 quart (500 ml) of a highly hazardous chemical (carcinogen, reproductive hazard, or has NIOSH/NIOSH health or physical hazard rating of 3 or 4)
- Blood and/or body fluids or class 1 or 2 biological material
- Not a likely release to a waterway or drain, and:
- Without an injury, chemical or biological exposure, and no fire or explosion has occurred!

Minor Spill Response
1. Notify fellow workers or students in vicinity of spill.
2. Secure area, by restricting access and posting signs.
3. Remove any potential ignition sources, unplug nearby electrical equipment, and ventilate the area if safe and possible.
4. Gather and review safety information on spilled chemical. Review chemical’s Material Safety Data Sheet (MSDS) for a hazard assessment and other pertinent information.
5. Refer to the BSU Spill Preparedness &Response Guide
6. Locate an appropriate Spill Kit, if available.
7. Don appropriate personal protective equipment (PPE) which usually includes chemical splash goggles, gloves, apron, coveralls, or lab coat. If high splash potential exists, also wear a face shield and protective clothing.
8. Confine and contain spill. Cover spill with appropriate absorbent material. Neutralize acid and base spills prior to cleanup.
9. Clean up spill using a scoop or other suitable item and place material in appropriate disposal container.
10. Decontaminate spill surface with mild detergent and water, as appropriate. Carefully remove PPE, place non-reusable items in disposal container and thoroughly wash hands.
11. Label the cleanup waste container. Contact EH&S Office to arrange for waste disposal.
13. Replenish spill kit or supplies.

Major Spill - Definition
A chemical or biological spill or release involving any of the following:
- Injury, fire, explosion, or exposure to hazardous chemical
- More than 1 gallon spill of a low toxicity chemical
- Over 1/2 quart (500 ml) of a highly hazardous chemical
- Unknown chemical, product, or material
- Mercury, hydrofluoric acid, reactives or pyrophoric
- Biological spill of a quantity or location needing assistance
- Beyond training or capability of Department or local staff

Major Spill Response
1. Notify and evacuate fellow workers to a safe area. Post the attached sign or isolate the area.

DO NOT ATTEMPT TO CLEAN A MAJOR SPILL ON YOUR OWN!

2. If spill poses a fire hazard—activate nearest fire alarm. Call BSU University Police at 911 (905-285-1111) and give details of spill including specific location, chemical, quantity, and if anyone is injured.

3. In case of an injury or chemical contamination:
   a. Wear PPE and move victim from spill area.
   b. If first aid trained, administer first aid as appropriate. Assist person to Health Center or Emergency Department (after hours) for treatment. If possible, bring chemical label or MSDS.
   c. Locate nearest emergency safety shower or eyewash. Remove contaminated clothing and flush affected areas (eyes or skin) with copious amounts of water for 15 minutes. Use soap on skin surfaces.

4. University Police will contact EH&S and either EH&S staff or outside personnel will respond to the spill.

5. Staff knowledgeable about the spill should provide responders with all pertinent information and MSDS.

6. The responders or designee will inform staff when it is safe to re-enter spill area.

For further information contact:
Environmental Health & Safety Office
Ball State University
Muncie, Indiana 47306
Phone: 765-285-2807
FAX: 765-285-6607
stigarsell@bsu.edu
Spill Occurs
Warn Others
Persons Injured?
Yes
First-Aid Trained?
Yes
No
No
Person Contaminated?
Yes
Render Assistance
No
No
Trained Responder?
No
Assess Risk
Yes
Major Spill
Minor
PPE and Spill Kit Available?
No
Isolate spill Area
Yes
Commence Clean-up
Emergency Responders Notified
Contact University Police (5-1111 or 911)
Asbestos

**Asbestos Awareness**

1. Asbestos is a naturally occurring inorganic mineral that was previously used in thousands of building materials. Asbestos-containing materials can be found in some of the buildings located on the BSU Campus and are normally a health or exposure concern unless the material is damaged or disturbed. It is important to familiarize yourself with the materials that are located in your work area. If you have questions or concerns about the building materials located in your area, or want to report damaged building materials, please contact the EHS Industrial Hygienist at 285-2832.

2. Currently, the EHS Office is identifying asbestos-containing materials within the buildings on campus. Building materials are being labeled with either non-asbestos (blue) stickers or stickers that indicate the presence of known or presumed asbestos-containing materials.

3. Employees, contractors, or visitors may contact the EHS Office to view the sampling data and the master list of asbestos-containing material locations.

4. Only trained, licensed, and authorized personnel or abatement contractors may remove or otherwise disturb asbestos materials—following specified work and containment procedures. This includes floor tile removal. OSHA requirements cover the routine maintenance of asbestos-containing floor tile that includes a few simple requirements covered by maintenance supervisors during initial instruction in the use of floor machines.

5. The EHS Office provides an approximate one-hour Asbestos Awareness training program to any personnel who work around asbestos-containing materials, or who may potentially come into contact with the material. This training can also be provided to any personnel or departments upon request. Employees are encouraged to participate in the BSU Asbestos Awareness program.

6. For further information on asbestos and how asbestos-containing material is managed on campus, or for any asbestos related questions or concerns, please contact Anthony Rench, BSU Industrial Hygienist, in the EHS Office at 285-2832 or via email at aarench@bsu.edu.

Working with Contractors

**University Responsibilities**

*During a pre-job walkthrough or meeting:*

1. Inform Contractors of any chemical hazards in the work area that their employees may encounter during the term of the contract; and,

2. Provide copies of relevant MSDS’s and our HCP to the contractor upon request, inform the contractor of the MSDS location, or contact the EHS Office.
**During the term of the contract:**

1. The BSU Project Manager, Facilities Planning and Management, and Department personnel should observe Contractor work practices to ensure that they are complying with all OSHA requirements and BSU policy;
2. Inquire as to any missing labels on chemical or fuel containers and the location of the corresponding MSDSs.

**Contractor Responsibilities**

 Contractors hired by Ball State University are required to observe the following guidelines regarding Hazard Communication (these guidelines apply to all sub-contractors also):

1. Inform the BSU Facilities Planning and Management (FPM) Department or Project Manager, in advance, of all hazardous materials to be used during a project on the Campus. Prior to beginning work, each contractor shall provide the University with an MSDS for each chemical to be stored or used on the Campus.
2. Inform, upon request by building occupants, or any employee of BSU, of the chemicals being used by the Contractor;
3. Ensure that each container of hazardous chemicals brought onto University property is properly labeled in accordance with this HCP and the OSHA Hazard Communication Standard;
4. Follow all work practices and precautions mandated by the chemical instructions, label, and MSDS;
5. Store and handle all fuels and oils in accordance with the University’s Spill Prevention Control and Countermeasures (SPCC) Plan; and,
6. Immediately report any releases of petroleum products or hazardous chemicals to Work Control (285-5081) and the EHS Office.

A copy of the Ball State University Hazard Communication Program will be available in the EHS Office, Environmental Specialist, for Contractor and Sub-contractor review or copying.

**Recordkeeping**

Keep all records required or maintained under this Hazard Communication Program in your Departmental files. Follow these guidelines:


## Recordkeeping Requirements

<table>
<thead>
<tr>
<th>Type of Record:</th>
<th>Keep For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSDS/SDS</td>
<td>As long as product is used in Department.</td>
</tr>
<tr>
<td>MSDS/SDS for employee exposure incident</td>
<td>Indefinitely (Duration of Employment + 30 years minimum)</td>
</tr>
<tr>
<td>Chemical Inventory List</td>
<td>As long as it is current – update as necessary</td>
</tr>
<tr>
<td>Training</td>
<td>Indefinitely – DOE + 30 years</td>
</tr>
<tr>
<td>Copy of this written Hazard Communication Plan</td>
<td>Until a new version is issued</td>
</tr>
</tbody>
</table>

## Program Review

All Departments must review all elements of this written *Hazard Communication Program* annually by October 1 of each calendar year, to ensure that it is current, accurate, and complete for their Department. Contact the EHS Office immediately if:

1. There is a change in the Department HCP Administrator:
2. New or revised SDS/MSDSs are identified;
3. New chemicals presenting new hazards are introduced into the workplace;
4. New tasks or processes involving chemicals are introduced;
5. Job duties are changed to involve the use of new chemicals;
6. There is a change in location(s) where chemicals are stored or used; or
7. There are changes in any other elements of work affected by this program.

The University EHS Office will also review this Program annually in order to revise it to address any inadequacies or concerns encountered during the preceding year. The written Program, or revised portions thereof, will be distributed to the various Departments as necessary.
Appendix A:  *Glossary of Terms and Acronyms*
The following compilation of definitions are directly from either the 1994 or 2012 OSHA Hazard Communication Standard, or are common toxicology or physical hazard terms that are included to assist in interpreting chemical labels or data sheets. The full regulatory text of the both the 1994 and 2012 Hazard Communication Standards provided in Appendices B1 and B2 may be reviewed for these and other definitions or acronyms.

**Article** means a manufactured item: (i) Which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and, (iii) which does not release, or otherwise result in exposure to, a hazardous chemical, under normal conditions of use.

**Aerosol** means any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state. Aerosol includes aerosol dispensers.

**Asphyxiant:** A gas or vapor that can displace or dilute air. Asphyxiants can cause unconsciousness and/or death if inhaled. Example: carbon dioxide, nitrogen.

**Aspiration** means the entry of a liquid or solid chemical product into the trachea and lower respiratory system directly through the oral or nasal cavity, or indirectly from vomiting;

**Autoignition (kindling) temperature:** The lowest temperature where a substance will auto-ignite and combust in normal atmospheric conditions without any external influences. (e.g., turpentine - 487°F)

**Carcinogen** means a chemical substance or a mixture of chemical substances which induce cancer or increase its incidence.

**Chemical** means any substance, or mixture of substances.

**Chemical identity** means a name that will uniquely identify a chemical. This can be a name that is in accordance with the nomenclature systems of the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS), or a technical name.

**Chemical manufacturer** means an employer with a workplace where chemical(s) are produced for use or distribution.

**Chemical name** means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules nomenclature, or a name, which clearly identify the chemical for the purpose of conducting a hazard evaluation.

**Classification** means to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition, classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.
Combustible liquid means any liquid having a flashpoint at or above 100 degree F, but below 200 degree F, except any mixture having components with flashpoints of 200 degree F, or higher, the total volume of which make up 99% or more of the total volume of the mixture.

Compressed gas means a gas which when packaged under pressure is entirely gaseous at -50°C; including all gases with a critical temperature £ -50°C.

Container means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

Contact sensitizer means a substance that will induce an allergic response following skin contact. The definition for “contact sensitizer” is equivalent to “skin sensitizer”.

Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. Examples: acids (nitric, acetic, sulfuric), alkalis (ammonium hydroxide, lye)

Corrosive to metal means a substance or a mixture which by chemical action will materially damage, or even destroy, metals.

Criteria means the technical definition for the physical, health and environmental hazards;

Cumulative toxins: Cannot be eliminated from the body. Repeated exposures to these substances cause accumulation in the body which can lead to chronic health issues – lead, cadmium, PAHs, PCBs, pesticides, acrylamide.

Endocrine disrupters: Chemicals which interfere with the normal operation of the bodies endocrine system which controls the immune system and hormones that regulates the body’s chemistry. Plasticizers (bisphenol A), dioxins, pharmaceuticals, DES, DEHP, phytoestrogens

Evaporation Rate: The rate at which a material (usually a solvent) will vaporize compared to the rate of vaporization of a specific known material, normally butyl acetate—Examples: hexane–8.3; acetone–5.6; VM&P naphtha–1.4; isobutyl alcohol –0.6; water–0.3; mineral spirits–0.1; turpentine <1.

Dermal Corrosion: see skin corrosion;

Dermal irritation: see skin irritation.

Employee means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

Explosive article means an article containing one or more explosive substances.
**Explosive substance** means a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not emit gases.

**Exposure or exposed** means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

**Eye irritation** means the production of changes in the eye following the application of test substance to the front surface of the eye, which are fully reversible within 21 days of application.

**Flammable gas** means a gas having a flammable range with air at 20°C and a standard pressure of 101.3 kPa.

**Flammable liquid** means a liquid having a flash point of not more than 93°C.

**Flammable solid** means a solid which is readily combustible, or may cause or contribute to fire through friction.

**Flammable (Explosive) Range:** The range of flammable vapor or gas-air mixture between the upper and lower flammable limits is known as the 'flammable range', also often referred to as the 'explosive range'. For example, the lower limit of flammability of natural gas at ordinary ambient temperatures is approximately 5 percent, while the upper limit is 15 percent. (turpentine 0.80% to 6.0%)

**Flash point** means the lowest temperature (corrected to a standard pressure of 101.3 kPa) at which the application of an ignition source causes the vapors of a liquid to ignite under specified test conditions.

**Foreseeable emergency** means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which could result in an uncontrolled release of a hazardous chemical into the workplace.

**GHS** means "the Globally Harmonized System of Classification and Labeling of Chemicals".

**Hazard category** means the division of criteria within each hazard class, (e.g., oral acute toxicity includes five hazard categories and flammable liquids includes four hazard categories). These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

**Hazardous chemical** means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

**Hazard class** means the nature of the physical, health or environmental hazard, e.g., flammable solid carcinogen, oral acute toxicity.

**Hazard not otherwise classified (HNOC)** means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that
does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

**Hazard statement** means a statement assigned to a hazard class and category that describes the nature of the hazards of a hazardous product, including, where appropriate, the degree of hazard;

**Hazardous Communication Program or HCP** refers to this written plan that establishes Ball State University’s procedures to identify and ensure the safe and proper handling of hazardous chemicals through proper labeling and maintenance of MSDSs (or SDSs), employee training, recordkeeping, provision of equipment, and other measures for the protection of all employees of the University in the storage, use, and handling of such hazardous chemicals.

**Hazard warning** means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard including target organ effects, of the chemicals in the containers.

**Health hazard** means a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to §1910.1200—Health Hazard Criteria.

**Identity** means any chemical or common name, which is indicated on the material safety data sheet (MSDS) for the chemical.

**IDLH: Immediately Dangerous to Life and Health:** exposure that is "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment" (e.g., turpentine – 800 ppm; Acetone – 2500 ppm).

**Immediate use** means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift it is transferred.

**Label** means an appropriate group of written, printed or graphic information elements concerning a hazardous product, selected as relevant to the target sector(s), which is affixed to, printed on, or attached to the immediate container of a hazardous product, or to the outside packaging of a hazardous product.

**Label element** means one type of information that has been harmonized for use in a label, e.g., pictogram, signal word.
**LC₅₀ (50% lethal concentration)** means the concentration of a chemical in air or of a chemical in water which causes the death of 50% (one-half) of a group of test animals.

**LD₅₀** means the amount of a chemical, given all at once, which causes the death of 50% (one-half) of a group of test animals.

**Liquefied gas** means a gas which when packaged under pressure, is partially liquid at temperatures above -50°C. A distinction is made between:

1. **High pressure liquefied gas**: a gas with a critical temperature between -50°C and +65°C; and,
2. **Low pressure liquefied gas**: a gas with a critical temperature above +65°C.

**Liquid** means a substance or mixture which at 50°C has a vapor pressure of not more than 300kPa (3bar), which is not completely gaseous at 20°C and at a standard pressure of 101.3kPa, and which has a melting point or initial melting point of 20°C or less at a standard pressure of 101.3 kPa. A viscous substance or mixture for which a specific melting point cannot be determined shall be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

**Material Safety Data Sheets (MSDS)** means written or printed material concerning a hazardous chemical (term to be replaced by Safety Data Sheets under GHS revisions).

**Mixture** means a mixture or a solution composed of two or more substances in which they do not react.

**Multiple exposure / synergistic**: When exposed to several different materials at once they may act in concert to compound a potentially negative effect on the body. This can happen through a single exposure or multiple exposures at varying levels over time.

**Mutagens**: Chemicals that alter the DNA of a cell. Mutated cells may be inherited through genetic lines if the mutation affects sperm or egg cells. Most other mutated cells die. Some known and probable mutagens: benzene, chromium, selenium, styrene, phenol and formaldehyde.

**Mutation** means a permanent change in the amount or structure of the genetic material in a cell.

**Non-cumulative toxins**: A toxic substance that the body can eliminate from itself like solvents. Although these toxins can be flushed from the body, the damage they cause may be permanent and accumulate over time.

**Odor Threshold**: The lowest concentration in air of a substance’s vapor that can be detected by human smell (e.g., turpentine-100 ppm).

**Organic peroxide** means a liquid or solid organic substance which contains the bivalent -0-0- structure and may be considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. Organic liquids or solids that can decompose explosively, burn rapidly, be sensitive to friction and react dangerously with
other chemicals. Examples: diethyl ether; isopropyl alcohol. The term also includes organic peroxide formulation (mixtures).

**Oxidizer** means a chemical other than a blasting agent or explosive as defined in CFR 1910.109(a), which initiates or promotes combustion on other materials, thereby causing fire either of itself or through the release of oxygen or other gases (replaced by more specific terms in GHS revisions as below).

**Oxidizing gas** means any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

**Oxidizing liquid** means a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

**Oxidizing Material:** A material (liquid, gas, or solid) which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material. Examples: oxygen, chlorine, nitric acid.

**Oxidizing solid** means a solid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

**Permissible Exposure Limit (PEL or OSHA PEL)** is a legal limit in the United States for exposure of an employee to a chemical substance or physical agent. For chemicals, the chemical regulation is usually expressed in parts per million (ppm), or sometimes in milligrams per cubic meter (mg/m³). Permissible exposure limits are established by the Occupational Safety and Health Administration (OSHA). A PEL is usually given as a time-weighted average (TWA), although some are short-term exposure limits (STEL) or ceiling limits.

**pH:** pH tells you whether a solution is acidic, basic, or neutral. The corresponding ranges are:

1. Acidic - the pH is between zero and 7.0
2. Neutral - the pH is 7.0
3. Basic solution (also called alkaline) - the pH is between 7.0 and 14.

**Physical hazard** means a chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to §1910.1200—Physical Hazard Criteria.

**Pictogram** means a composition that may include 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. Eight pictograms are designated under this standard for application to a hazard category.

**Precautionary statement** means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.
**Produce** means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

**Product identifier** means the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

**Pyrophoric** means a chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C), or below (replaced by more specific terms in the GHS revisions as below).

**Pyrophoric gas** means a chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

**Pyrophoric liquid** means a liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

**Pyrophoric solid** means a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

**Pyrotechnic article** means an article containing one or more pyrotechnic substances;

**Pyrotechnic substance** means a substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining exothermic (heat-related) chemical reactions.

**Readily combustible solid** means a powdered, granular, or pasty substance or mixture which is dangerous if it can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

**Recommended Exposure Limit (REL)** is an occupational exposure limit that has been recommended by the United States National Institute for Occupational Safety and Health. The REL is a level that NIOSH believes would be protective of worker safety and health over a working lifetime if used in combination with engineering and work practice controls, exposure and medical monitoring, posting and labeling of hazards, worker training and personal protective equipment. RELs for chemical exposures are usually expressed in parts per million (ppm), or sometimes in milligrams per cubic metre (mg/m³).

**Refrigerated liquefied gas** means a gas which when packaged is made partially liquid because of its low temperature.

**Reproductive Toxin:** A chemical which affects the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). Women of childbearing potential should be especially careful when handling reproductive toxins.

**Respiratory sensitizer** means a substance that induces hypersensitivity of the airways following inhalation of the substance.
**Safety data sheet (SDS)** means written or printed material concerning a hazardous chemical that is prepared in accordance with paragraph (g) of this section.

**Self-Accelerating Decomposition Temperature (SADT)** means the lowest temperature at which self-accelerating decomposition may occur with substance as packaged.

**Self-heating substance** means a solid or liquid substance, other than a pyrophoric substance, which, by reaction with air and without energy supply, is liable to self-heat; this substance differs from a pyrophoric substance in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

**Self-reactive substance** means a thermally unstable liquid or solid substance liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances or mixtures classified under the GHS as explosive, organic peroxides or as oxidizing.

**Sensitizers:** Can cause allergies and hypersensitivity to materials.

**Serious eye damage** means the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the front surface of the eye, which is not fully reversible within 21 days of application.

**Signal word** means a 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 in this section are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for the less severe.

**Simple asphyxiant** means a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

**Skin corrosion** means the production of irreversible damage to the skin following the application of a test substance for up to 4 hours.

**Skin irritation** means the production of reversible damage to the skin following the application of a test substance for up to 4 hours.

**Skin sensitizer** means a substance that will induce an allergic response following skin contact. The definition for "skin sensitizer" is equivalent to "contact sensitizer".

**Solid** means a substance or mixture which does not meet the definitions of a liquid or gas.

**Specific chemical identity** means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

**Specific Gravity:** A ratio of the mass of a material to the mass of an equal volume of water at 4°C (39°F). s.g. > 1.0 sinks; s.g. < 1.0 floats.
**STEL (Short term exposure limit):** The exposure level to which workers can be exposed continuously for a short period of time (usually 15 minutes by ACGIH) without suffering from irritation, chronic or irreversible tissue damage, or narcosis of sufficient degree to increase the likelihood of accidental injury or impair self-rescue. (Acetone – 750 ppm)

**Substance** means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

**Supplemental label element** means any additional non-harmonized type of information supplied on the container of a hazardous product that is not required or specified under the GHS. In some cases this information may be required by other competent authorities or it may be additional information provided at the discretion of the manufacturer/distributor.

**Symbol** means a graphical element intended to succinctly convey information.

**Target Organ Toxicity:** Those chemicals that are specific target organ toxicants and, as such, present a potential for adverse health effects in people who are exposed to it (i.e., nephrotoxins – chlorinated solvents, cadmium, lead).

**Teratogens (developmental & reproductive toxins):** Affect fetal development. Some know teratogens include alcohol, solvents, cadmium, and lead.

**Threshold Limit Value (TLV)** means the level of a chemical substance to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. Strictly speaking, TLV is a reserved term of the American Conference of Governmental Industrial Hygienists (ACGIH).

**TLV-C / Threshold limit value - Ceiling:** Maximum allowable human exposure limit for an airborne or gaseous substance (such as chlorine, hydrogen chloride, nitrogen dioxide) which is not to be exceeded even momentarily. (e.g., ethylene glycol – 100 mg/m3)

**TWA / Time Weighted Average** is the average exposure over a specified period of time, usually eight hours over a 40-hour work week. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower.

**Unstable (reactive)** means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.

**Use** means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

**Vapor Density:** The relative weight of a gas or vapor compared to air, which has an arbitrary value of one. If a gas has a vapor density of less than one it will generally rise in air. If the vapor density is greater than one the gas will generally sink in air. (e.g., turpentine – 4.84).
**Vapor Pressure:** The pressure exerted when the liquid and vapor are in dynamic equilibrium. If a substance were put in a closed container, some of it would vaporize. The pressure in the space above the liquid would increase from zero and eventually stabilize at a constant value - the vapor pressure. Liquids that aren't in a closed container still have a vapor pressure.

**Volatile Organic Compound:** Organic chemical compounds that have high enough vapor pressures under normal conditions to significantly vaporize and enter the atmosphere. Examples: *many solvents.*

**Water Reactive:** Substance which, in contact with water, emits flammable gases means a solid or liquid substance or mixture which, by interaction with water, is liable to become spontaneously flammable or to give off flammable gases in dangerous quantities. Examples: calcium carbide, sodium, lithium

**Work area** means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

**Workplace** means an establishment, job site, or project, at one geographical location containing one or more work areas.
1994 OSHA HAZARD COMMUNICATION STANDARD

Final Rule 9 February 1994:
Subpart Z of Part 1910 of Title 29 of the Code of Federal Regulations (CFR) is hereby amended by adding a new paragraph 1910.1200 to read as follows:

1910.1200 Hazard Communication

(a) PURPOSE.

(1) The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets, and employee training.

(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential hazards of chemicals, and communicating information requirements of a state, or political subdivision of a state, pertaining to this subject. Evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for developing and maintaining a written hazard communication program for the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of material safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under Section 18 of the Act, no state or political subdivision of state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) SCOPE AND APPLICATION.

(1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of hazard communication program, labels and other forms of warning, material safety data sheets, and information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for such employers to help them determine their compliance obligations under the rule.)

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.
(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;
(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible during each work shift to laboratory employees when they are in their work areas;
(iii) Employers shall ensure that laboratory employees are provided information and training in accordance with paragraph (h) of this section, except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section; and,
(iv) Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f)(1) of this section, and that a material safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;
(ii) Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,
(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(5) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;
(ii) Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;
(iii) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the
labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;
(iv) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms;
(v) Any consumer products or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirements of those Act, or regulations issued under those Acts by the Consumer Product Safety Commission; and, (vi) Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(6) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;
(ii) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(42 U.S.C. 9601 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;
(iii) Tobacco or tobacco products;
(iv) Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);
(v) Articles (as that term is defined in paragraph(c) of this section);
(vi) Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;
(vii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);
(viii) Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;
(ix) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;
(x) Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;}
(xi) Ionizing and non-ionizing radiation; and,
(xii) Biological hazards.

(c) DEFINITIONS.

“Article” means a manufactured item other than a fluid or particle: (1) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

“Assistant Secretary” means the Assistant Secretary of Labor for Occupational Safety and Health, US Department of Labor, or designee.

“Chemical” means any element, chemical compound or mixture of elements and/or compounds.

“Chemical manufacturer” means an employer with a workplace where chemical(s) are produced for use or distribution.

“Chemical name” means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

“Combustible liquid” means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

“Commercial account” means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

“Common name” means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

“Compressed gas” means:
(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or
(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or
(iii) A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

“Container” means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.
“Designated representative” means any individual or organization to whom an employee gives written authorization to exercise such employee’s rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

“Director” means the Director, National Institute for Occupational Safety and Health, US Department of Health and Human Services, or designee.

“Distributor” means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

“Employee” means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

“Employer” means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

“Explosive” means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

“Exposure or exposed” means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. “Subjected” in terms of health hazard includes any route of entry (e.g. inhalation, ingestion, skin contact, or absorption.)

“Flammable” means a chemical that falls into one of the following categories:

(i) Aerosol, flammable means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) Gas, flammable means: (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or (B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) Liquid, flammable means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoint of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) Solid, flammable means a solid, other than a blasting agent or explosive as defined in 1910.109 (a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44 it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major area axis.

“Flashpoint” means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D-56-79) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100°F (37.8°C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or
(ii) Pensky-Martens Closed Tester (See American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D-93-79) for liquids with a viscosity equal to or greater than 45 SUS at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test; or (iii) Setaflash Closed Tester (See American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)). Organic peroxides, which undergoauto accelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

“Foreseeable emergency” means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

“Hazardous chemical” means any chemical which is a physical hazard or a health hazard.

“Hazard warning” means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical or health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for “physical hazard” and “health hazard” to determine the hazards which must be covered.)

“Health hazard” means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term “health hazard” included chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

“Identity” means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

“Immediate use” means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

“Importer” means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

“Label” means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

“Material safety data sheet (MSDS)” means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

“Mixture” means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
“Organic peroxide” means an organic compound that contains the bivalent O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

“Oxidizer” means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

“Physical hazard” means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

“Produce” means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

“Pyrophoric” means a chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

“Responsible party” means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

“Specific chemical identity” means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

“Trade secret” means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer’s business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.

“Unstable (reactive)” means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

“Use” means to package, handle, react, emit, extract, generate as byproduct, or transfer.

“Water-reactive” means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

“Work area” means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

“Workplace” means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) HAZARD DETERMINATION.

(1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and
consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the Criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(i) 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety Health Administration (OSHA); or,
(ii) Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition). The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(i) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);
(ii) International Agency for Research on Cancer (IARC) Monographs (latest editions); or
(iii) 29 CFR Part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

Note: The registry of Toxic Effects of Chemical Substances published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;
(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;
(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,
(iv) If the chemical manufacturer, importer, or employer has evidence to indicate that component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard.
Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) WRITTEN HAZARD COMMUNICATION PROGRAM.

(1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:

- A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for the individual work areas); and,
- The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employers(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

- The methods the employer will use to provide the other employer(s) on-site access to material safety data sheets for each hazardous chemical the other employer(s) employees may be exposed to while working;
- The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace’s normal operating conditions and in foreseeable emergencies; and,
- The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20 (e).

(5) Where employees must travel between workplaces during a work shift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) LABELS AND OTHER FORMS OF WARNING.

(1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:
(i) Identity of the hazardous chemical(s);
(ii) Appropriate hazard warnings; and chemical manufacturer, importer, or other responsible part.
(iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) (i) For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;
(ii) The label may be transmitted with the initial shipment itself, or with the material safety data sheet that is to be provided prior to or at the time of the first shipment; and
(iii) This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains).

(3) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under the Act by the Department of Transportation.

(4) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor, or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(5) Except as provided in paragraphs (f)(6) and (f)(7) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following information:

(i) Identity of the hazardous chemical(s) contained therein; and,
(ii) Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(6) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written material in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(5) of this section to be on a label. The written material shall be readily accessible to the employees in their work area throughout each work shift.

(7) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. For purposes of this section, drugs which are
dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is present in English as well.

(10) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(11) 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 three months of becoming aware of the new information. Labels on containers of hazardous chemicals shipped after that time shall contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importers, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

(g) MATERIAL SAFETY DATA SHEETS.

(1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet in the workplace for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English (although the employer may maintain copies in other languages as well), and shall contain at least the following information:

   (i) The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:
      (A) If the hazardous chemical is a single substance, its chemical and common name(s);
      (B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,
      (C) If the hazardous chemical is a mixture which has not been tested as a whole;
      (1) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d) of this section shall be listed if the concentrations are 0.1% or greater; and,
      (2) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredients(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees; and,
      (3) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;
   (ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);
(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;
(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;
(v) The primary route(s) of entry;
(vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;
(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;
(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;
(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;
(x) Emergency and first aid procedures;
(xi) The date of preparation of the material safety data sheet or the last change to it; and,
(xii) The name, address, and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer, or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer preparing the material safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) (i) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated;
(ii) The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;
(iii) If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributors or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,

(iv) The chemical manufacturer or importer shall also provide distributors or employers with a material safety data sheet upon request.

(7)

(i) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a material safety data sheet is updated;

(ii) The distributor shall either provide material safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;

(iii) Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a material safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available;

(iv) Wholesale distributors selling hazardous chemicals to employers over-the-counter may also, as an alternative to keeping a file of material safety data sheets for all hazardous chemicals they sell, provide material safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a material safety data sheet is available;

(v) If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have material safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a material safety data sheet can be obtained;

(vi) Wholesale distributors shall also provide material safety data sheets to employers or other distributors upon request; and,

(vii) Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

(8) The employer shall maintain in the workplace copies of the required material safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(9) Where employees must travel between workplaces during a work shift, i.e., their work is carried out at more than one geographical location, the material safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(10) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).
(11) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.20(e). The Director shall also be given access to material safety data sheets in the same manner.

(h) EMPLOYEE INFORMATION AND TRAINING.

(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(2) Information. Employees shall be informed of;

(i) The requirements of this section;
(ii) Any operations in their work area where hazardous chemicals are present; and,
(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(3) Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
(ii) The physical and health hazards of the chemicals in the work area;
(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) TRADE SECRETS.

(1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;
(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;
(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,
(iv) The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.
(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i) (3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (I)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing the medical or other occupational health services to exposed employee(s), and to employees or designated representative, if;

   (i) The request is in writing;
   (ii) The request describes with reasonable detail one or more of the following occupational health needs for the information.
       (A) To assess the hazards of the chemicals to which employees will be exposed;
       (B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;
       (C) To conduct pre-assignment or periodic medical surveillance of exposed employees;
       (D) To provide medical treatment to exposed employees;
       (E) To select or assess appropriate personal protective equipment for exposed employees; and,
       (F) To design or assess engineering controls or other protective measures for exposed employees; and,
       (G) To conduct studies to determine the health effects of exposure.
   (iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this section:
       (A) The properties and effects of the chemical;
       (B) Measures for controlling workers’ exposure to the chemical;
       (C) Methods of monitoring and analyzing worker exposure to the chemical; and,
       (D) Methods of diagnosing and treating harmful exposures to the chemical;
   (iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,
   (v) The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentially agreement authorized by paragraph (i)(3)(iv) of this section:

   (i) May restrict the use of the information to the health purposes indicated in the written statement of need;
(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,
(iii) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i) Be provided to the health professional, employee, or designated representative, within thirty days of the request;
(ii) Be in writing;
(iii) Include evidence to support the claim that the specific chemical identity is a trade secret;
(iv) State the specific reasons why the request is being denied; and,
(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(9) When a health professional, employee, or designated representative refers to the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;
(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,
(iii) The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

(10) If OSHA determines that the specific chemical identity requested under paragraph (i)(3) of this section is not a bona fide trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm for the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitation or conditions upon the disclosure of the requested chemical information as undue risk of harm to the chemical manufacturer, importer, or employer.
(11) If a citation for a failure to release specific chemical identity information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the occupational Safety and Health Review Commission in accordance with the Act’s enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation in camera or issue appropriate orders to protect the confidentiality of such matters.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the assistant secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.
2012 OSHA HAZARD COMMUNICATION STANDARD (with GHS Revisions)

Final Rule March 26, 2012
Subpart Z of Part 1910 of Title 29 of the Code of Federal Regulations (CFR) is hereby amended by revising paragraph 1910.1200 to read as follows:

1910.1200 Hazard Communication

(a) Purpose.

(a)(1) The purpose of this section is 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. The requirements of this section are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3. The transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, safety data sheets and employee training.

(a)(2) This occupational safety and health standard is intended to address comprehensively the issue of classifying the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legislative or regulatory enactments of a state, or political subdivision of a state, pertaining to this subject. Classifying the potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) Scope and application.

(b)(1) This section requires chemical manufacturers or importers to classify the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers.)

(b)(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.
(b)(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain any safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible during each workshift to laboratory employees when they are in their work areas;

(iii) Employers shall ensure that laboratory employees are provided information and training in accordance with paragraph (h) of this section, except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section; and,

(iv) Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f) of this section, and that a safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(b)(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain copies of any safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a safety data sheet if an employee requests the safety data sheet, and shall ensure that the safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,

(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(b)(5) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(ii) Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(iii) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;
(iv) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, Firearms and Explosives;

(v) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

(vi) Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(b)(6) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(ii) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.) when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with Environmental Protection Agency regulations.

(iii) Tobacco or tobacco products;

(iv) Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);

(v) Articles (as that term is defined in paragraph (c) of this section);

(vi) Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(vii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

(viii) Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(ix) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;
(x) Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

(xi) Ionizing and nonionizing radiation; and,

(xii) Biological hazards.

(c) Definitions.

"Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any substance, or mixture of substances.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name that will clearly identify the chemical for the purpose of conducting a hazard classification.

"Classification" means to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition, classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.

"Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.
"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

"Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

"Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

"Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazard category" means the division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

"Hazard class" means the nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

"Hazard not otherwise classified (HNOC)" means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

"Hazard statement" means 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.

"Hazardous chemical" means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

"Health hazard" means a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to §1910.1200 -- Health Hazard Criteria.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.
"Label" means an appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

"Label elements" means the specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category.

"Mixture" means a combination or a solution composed of two or more substances in which they do not react.

"Physical hazard" means a chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to §1910.1200 -- Physical Hazard Criteria.

"Pictogram" means a composition that may include 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. Eight pictograms are designated under this standard for application to a hazard category.

"Precautionary statement" means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

"Product identifier" means the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

"Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

"Pyrophoric gas" means a chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Safety data sheet (SDS)" means written or printed material concerning a hazardous chemical that is prepared in accordance with paragraph (g) of this section.

"Signal word" means a 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 in this section are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for the less severe.

"Simple asphyxiants" means a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Substance" means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any.

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impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix E to §1910.1200—Definition of Trade Secret, sets out the criteria to be used in evaluating trade secrets.

"Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) Hazard classification.

(d)(1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to classify the chemicals in accordance with this section. For each chemical, the chemical manufacturer or importer shall determine the hazard classes, and where appropriate, the category of each class that apply to the chemical being classified. Employers are not required to classify chemicals unless they choose not to rely on the classification performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(d)(2) Chemical manufacturers, importers or employers classifying chemicals shall identify and consider the full range of available scientific literature and other evidence concerning the potential hazards. There is no requirement to test the chemical to determine how to classify its hazards. Appendix A to §1910.1200 shall be consulted for classification of health hazards, and Appendix B to §1910.1200 shall be consulted for the classification of physical hazards.

(d)(3) Mixtures.

(i) Chemical manufacturers, importers, or employers evaluating chemicals shall follow the procedures described in Appendices A and B to §1910.1200 to classify the hazards of the chemicals, including determinations regarding when mixtures of the classified chemicals are covered by this section.

(ii) When classifying mixtures they produce or import, chemical manufacturers and importers of mixtures may rely on the information provided on the current safety data sheets of the individual ingredients, except where the chemical manufacturer or importer knows, or in the exercise of reasonable diligence should know, that the safety data sheet misstates or omits information required by this section.

(e) Written hazard communication program.

(e)(1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, safety data sheets, and employee information and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using a product identifier that is referenced on the appropriate safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,
(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(e)(2) "Multi-employer workplaces." Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(i) The methods the employer will use to provide the other employer(s) on-site access to safety data sheets for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(e)(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e)(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.1020 (e).

(e)(5) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) **Labels and other forms of warning.**

(f)(1) Labels on shipped containers. The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked. Hazards not otherwise classified do not have to be addressed on the container. Where the chemical manufacturer or importer is required to label, tag or mark the following shall be provided:

(i) Product identifier;

(ii) Signal word;

(iii) Hazard statement(s);

(iv) Pictogram(s);

(v) Precautionary statement(s); and,

(vi) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.

(f)(2) The chemical manufacturer, importer, or distributor shall ensure that the information provided under paragraphs (f)(1)(i) through (v) is in accordance with Appendix C, Allocation of Label Elements, for
each hazard class and associated hazard category for the hazardous chemical, prominently displayed, and in English (other languages may also be included if appropriate).

(f)(3) The chemical manufacturer, importer, or distributor shall ensure that the information provided under paragraphs (f)(1)(ii) through (iv) is located together on the label, tag, or mark.

(f)(4) Solid materials

(i) For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;

(ii) The label may be transmitted with the initial shipment itself, or with the safety data sheet that is to be provided prior to or at the time of the first shipment; and,

(iii) This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains).

(f)(5) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(f)(6) Workplace labeling. Except as provided in paragraphs (f)(7) and (f)(8) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with either:

(i) The information specified under paragraphs (f)(1)(i) through (v) for labels on shipped containers; or,

(ii) Product identifier and words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(f)(7) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(6) of this section to be on a label. The employer shall ensure the written materials are readily accessible to the employees in their work area throughout each work shift.

(f)(8) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. For purposes of this section, drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(f)(9) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.
(f)(10) The employer shall ensure that workplace labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(f)(11) 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.

(g) Safety data sheets.

(g)(1) Chemical manufacturers and importers shall obtain or develop a safety data sheet for each hazardous chemical they produce or import. Employers shall have a safety data sheet in the workplace for each hazardous chemical which they use.

(g)(2) The chemical manufacturer or importer preparing the safety data sheet shall ensure that it is in English (although the employer may maintain copies in other languages as well), and includes at least the following section numbers and headings, and associated information under each heading, in the order listed (See Appendix D to §1910.1200--Safety Data Sheets, for the specific content of each section of the safety data sheet):

(i) Section 1, Identification;
(ii) Section 2, Hazard(s) identification;
(iii) Section 3, Composition/information on ingredients;
(iv) Section 4, First-aid measures;
(v) Section 5, Fire-fighting measures;
(vi) Section 6, Accidental release measures;
(vii) Section 7, Handling and storage;
(viii) Section 8, Exposure controls/personal protection;
(ix) Section 9, Physical and chemical properties;
(x) Section 10, Stability and reactivity;
(xi) Section 11, Toxicological information.

Note 1 to paragraph (g)(2): To be consistent with the GHS, an SDS must also include the following headings in this order:

(xii) Section 12, Ecological information;
(xiii) Section 13, Disposal considerations;
(xiv) Section 14, Transport information; and

(xv) Section 15, Regulatory information.

Note 2 to paragraph (g)(2): OSHA will not be enforcing information requirements in sections 12 through 15, as these areas are not under its jurisdiction.

(xvi) Section 16, Other information, including date of preparation or last revision.

(g)(3) If no relevant information is found for any sub-heading within a section on the safety data sheet, the chemical manufacturer, importer or employer preparing the safety data sheet shall mark it to indicate that no applicable information was found.

(g)(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one safety data sheet to apply to all of these similar mixtures.

(g)(5) The chemical manufacturer, importer or employer preparing the safety data sheet shall ensure that the information provided accurately reflects the scientific evidence used in making the hazard classification. If the chemical manufacturer, importer or employer preparing the safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the safety data sheet before the chemical is introduced into the workplace again.

(g)(6)(i) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate safety data sheet with their initial shipment, and with the first shipment after a safety data sheet is updated;

(ii) The chemical manufacturer or importer shall either provide safety data sheets with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;

(iii) If the safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,

(iv) The chemical manufacturer or importer shall also provide distributors or employers with a safety data sheet upon request.

(g)(7)(i) Distributors shall ensure that safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a safety data sheet is updated;

(ii) The distributor shall either provide safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;

(iii) Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a safety data sheet is available;
(iv) Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a safety data sheet is available;

(v) If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a safety data sheet can be obtained;

(vi) Wholesale distributors shall also provide safety data sheets to employers or other distributors upon request; and,

(vii) Chemical manufacturers, importers, and distributors need not provide safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

(g)(8) The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(g)(9) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(g)(10) Safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

(g)(11) Safety data sheets shall also be made readily available, upon request, to designated representatives, the Assistant Secretary, and the Director, in accordance with the requirements of 29 CFR 1910.1020(e).

(h) Employee information and training.

(h)(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

(h)(2) Information. Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,
(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and safety data sheets required by this section.

(h)(3) Training. Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labels received on shipped containers and the workplace labeling system used by their employer; the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information.

(i) Trade secrets.

(1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name, other specific identification of a hazardous chemical, or the exact percentage (concentration) of the substance in a mixture, from the safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;

(ii) Information contained in the safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(iii) The safety data sheet indicates that the specific chemical identity and/or percentage of composition is being withheld as a trade secret; and,

(iv) The specific chemical identity and percentage is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity or percentage composition, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional (i.e. physician, industrial
hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:

(i) The request is in writing;

(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(D) To provide medical treatment to exposed employees;

(E) To select or assess appropriate personal protective equipment for exposed employees;

(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity or percentage composition is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this section:

(A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(v) The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(i)(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;
(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(iii) May not include requirements for the posting of a penalty bond.

(i)(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(i)(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.

(i)(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity or percentage composition, the denial must:

(i) Be provided to the health professional, employee, or designated representative, within thirty days of the request;

(ii) Be in writing;

(iii) Include evidence to support the claim that the specific chemical identity or percent of composition is a trade secret;

(iv) State the specific reasons why the request is being denied; and,

(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the trade secret.

(i)(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(i)(9) When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity or percentage composition is a trade secret;

(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,

(iii) The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

(i)(10)(i) If OSHA determines that the specific chemical identity or percentage composition requested under paragraph (i)(3) of this section is not a "bona fide" trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.
(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(i)(11) If a citation for a failure to release trade secret information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation "in camera" or issue appropriate orders to protect the confidentiality of such matters.

(i)(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(i)(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process information which is a trade secret.

(j) Effective dates.

(1) Employers shall train employees regarding the new label elements and safety data sheets format by December 1, 2013.

(2) Chemical manufacturers, importers, distributors, and employers shall be in compliance with all modified provisions of this section no later than June 1, 2015, except:

(i) After December 1, 2015, the distributor shall not ship containers labeled by the chemical manufacturer or importer unless the label has been modified to comply with paragraph (f)(1) of this section.

(ii) All employers shall, as necessary, update any alternative workplace labeling used under paragraph (f)(6), update the hazard communication program required by paragraph (h)(1), and provide any additional employee training in accordance with paragraph (h)(3) for newly identified physical or health hazards no later than June 1, 2016.

(3) Chemical manufacturers, importers, distributors, and employers may comply with either §1910.1200 revised as of October 1, 2011, or the current version of this standard, or both during the transition period.
Appendix C: Department HCP
Administrator Designation
Designation of Department Administrator for Ball State University
OSHA Hazard Communication Program

Department: ____________________________________________________________

Administrator: _________________________________________________________

Alternate Contact Person: ________________________________________________

Building: ______________________________________________________________

Office, Room, or Location: _______________________________________________

Date: __________________________________________________________________

Telephone: _____________________________________________________________

Email: __________________________________________________________________

Fax: ____________________________________________________________________

Location of Written HCP: ________________________________________________

Location of MSDSs for Department: _______________________________________

Please return one (1) completed copy of this form to:

Environmental Specialist/Chemical Hygiene Officer
Environmental, Health, and Safety Office
North Service Building
Ball State University

Another copy should remain with this Department’s written Program.
Designation of Administrator for 
Ball State University 
OSHA Hazard Communication Program

Department: Facilities Management and Planning, EHS Office
Administrator: Thomas Russell, CHMM, REHS, CCHO
Alternate Contact Person: Anthony Rench, Industrial Hygienist
Building: North Service Building
Office, Room, or Location: West of Showalter (FPM) Building
Date: November 1, 2013
Telephone: 765-285-2807
Email: tlrussell@bsu.edu
Fax: 765-285-6607
Location of Written HCP: North Service Building and in the various 
BSU workplaces, shops, studios, labs, and other locations where 
hazardous chemicals or products containing hazardous chemicals 
are used or handled.
Appendix D: Chemical Inventory List
(by BSU Department)
<table>
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<th>Chemical / Material Name</th>
<th>Manufacturer</th>
<th>Maximum Quantity (state units)</th>
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<th>MSDS on file (Yes / No)</th>
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Appendix E: *Training Record Forms*
OSHA Hazard Communication Training Record

1. Department: ____________________________________________________________

2. Trainer(s): ____________________________________________________________

3. Trainer Title(s): ________________________________________________________

4. Contact Person: ____________________________ Phone: __________________ Email: __________________

5. Department/Group/Employees Being Trained: __________________________________

6. Date and Time(s): ________________________________________________________

7. Location of Training: _____________________________________________________

8. Type of Training for the Employee(s):
   Initial: ______ New Hazard: _____ Refresher: _____ New Employee(s): _____

9. Number of People Trained on this Subject: ______________________
   (Please attach copy of attendance sheet(s) – see next page for example

10. Training Materials Used: __________________________________________________
     (Please attach or reference the sign-in sheets, handouts, outlines, powerpoint, etc.)


12. Additional Information: __________________________________________________

Please forward this form and attachments (copy of attendance sheet and training outline) to:

Hazard Communication Coordinator,
Environmental, Health, and Safety Office,
Ball State University,
North Service Building
3401 North Tillotson,
Muncie, Indiana 47306

Be sure to keep copies for your Department’s Hazard Communication Program files.
**OSHA Hazard Communication Training Roster**

Date: ___________  Instructor: ________________________________

Department: ________________________________

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<th>#</th>
<th>Print Name</th>
<th>Signature</th>
<th>Title / Job/or Dept.</th>
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Training Type (insert in last column next to name):

I – *Initial (first time at BSU) Hazard Communication training*

N – *New employee*

R – *Refresher*

H – *New hazard class, duty, or chemical introduced to work or work area*
Appendix F: *Hazard Classes Under the 2012 (GHS) Hazard Communication Standard*
Remember, there are normally 2 or more Hazard Categories within the Hazard Classes that further define the extent and severity of the particular health or physical hazard
2012 GHS Health Hazards (10)

- Acute Toxicity
- Skin corrosion/Irritation
- Serious eye damage/eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Target organ system toxicity – Single exposure
- Target organ system toxicity – repeated exposure
- Aspiration hazard
**Definitions: Health Hazards**

- **Acute toxicity** "refers to those adverse effects occurring following oral or dermal administration of a single dose of a substance, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours."

  - Substances are assigned to one of five included categories based on oral, dermal, and inhalation toxicity. OSHA did not adopt category 5.

**Definitions: Health Hazards**

- **Skin corrosion** is defined as "the production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis, which was followed by the application of a test substance for up to 4 hours."

  - GHS does not require additional testing. Based on available data for that chemical.

- Corrosive reactions are typified by ulcers, bleeding, bloody scabs.
Definitions: Health Hazards

- Skin irritation is defined as "the production of reversible damage to the skin following the application of a test substance for up to 4 hours".

OSHA adopted two categories for the Skin Corrosion/irritation hazard class.

Definitions: Health Hazards

- Skin sensitizer "means a chemical that induces an allergic response following skin contact".

- Respiratory sensitizer "means a chemical that will lead to hypersensitivity of the airways following inhalation of the chemical".
  - There are two categories for the Respiratory or Skin Sensitization hazard class.
Definitions: Health Hazards

- Two categories for eye hazards

- Eye irritation is defined as “the production of changes in the eye following the application of test substance to the anterior surface of the eye, which are full reversible within 21 days of application”.

Definitions: Health Hazards

- Serious eye damage is defined as the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the anterior surface of the eye, which is not fully reversible within 21 days of application.”
Definitions: Health Hazards

- Germ Cell Mutagenicity
  - A mutation “is defined as a permanent change in the amount or structure of the genetic material in a cell”.
  - The term mutagenic and mutagen “will be used for agents giving rise to an increased occurrence of mutations in populations of cells and/or organisms”.
  - Two categories in this hazard class

Definitions: Health Hazards

- Carcinogen “means a substance or a mixture of substances which induce cancer or increase its incidence.”
  - Substances and mixtures which have induced benign and malignant tumors in well-performed experimental studies on animals are considered also to be presumed or suspected human carcinogens.
  - Two categories in this hazard
**Definitions: Health Hazards**

- **Reproductive toxicity** “includes adverse effects on sexual function and fertility in adult males and females, as well as adverse effects on development of the offspring.”
  - Adverse effects on development of the offspring means “any effect of chemicals which interferes with normal development of the conceptus either before or after birth”.

- **Two categories in this hazard**

**Definitions: Health Hazards**

- **Aspiration means** “the entry of a liquid or solid chemical directly through the oral or nasal cavity, or indirectly from vomiting, into the trachea and lower respiratory system”.
  - Includes severe acute effects such as chemical pneumonia, varying degrees of pulmonary injury or death following aspiration.
  - Only one category adopted
New Definitions...

GHS – Physical Hazards

2012 GHS Physical Hazards (16)

- Explosives
- Flammable gases
- Flammable aerosols
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive substances and mixtures
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating substances and mixtures
- Substances and mixtures which, in contact with water, emit flammable gases
- Oxidizing liquids
- Oxidizing solids
- Organic peroxides
- Corrosive to metals
Physical Hazards...

- Explosive Substances and Mixtures
  - Solid or liquid substances capable of producing gas at such a high temperature and pressure that it can cause damage to surroundings.
  - Divided into 6 categories based on type of damage produced.

Physical Hazards...

- Flammables, include
  - Flammable Gases
  - Flammable Aerosols
  - Flammable Liquids
  - Flammable Solids
Physical Hazards...

- Flammable gas means a gas having a flammable range with air at 20°C (68 F) and a standard pressure of 101.3 kPa (14.7 psi).
  - Two categories

Physical Hazards...

- Flammable Liquids
  - Any liquid with a flash point of 93 degrees C (199.4 F) or less.
  - Four categories

- Flammable Solids means a solid, usually in a powder or granular form, that is easily combustible through friction
  - Two categories
Physical Hazards...

- **Aerosol means** “any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, and fitted with a release device allowing the contents to be ejected as particles in suspension in a gas, or as a foam, paste, powder, liquid or gas.”

- Flammable Aerosols
  - Contain Flammable components
  - Two categories

Physical Hazards ...

- **Oxidizing gas** “means any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does”. One category.

- Oxidizing Liquids and Solids
  - Though not necessarily combustible on their own, generally by yielding oxygen cause or contribute combustion of other material.
  - Three categories
Physical Hazards ...

- **Gases Under Pressure**
  - Gases contained in a receptacle at a pressure of 200 kPa (29 psi) or more, which are liquefied or liquefied and refrigerated
  - Includes 4 groups: compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases

Physical Hazards ...

- **Self-reactive chemicals are thermally unstable liquid or solid chemicals liable to undergo a strongly exothermic decomposition even without participation of oxygen (air).**
- Divided in 7 categories similar to those in the transport sector
- Excludes oxidizers, organic peroxides and explosives.
Physical Hazards ...

- Pyrophoric Solids/Liquids means a solid liquid "which, even in small quantities, is liable to ignite within five minutes after coming into contact with air".
  - Mildly pyrophoric solids can be handled in the air for brief periods of time.
  - One category for each

Physical Hazards ...

- Self-Heating Chemicals
  - Solids or liquids, other than pyrophoric, which by reaction with air and without energy supply is liable to self heat. (Two categories)
  - They require large amounts of material and long periods of time to ignite.
Physical Hazards ...

- **Chemicals which in contact with water, Emit Flammable Gas** are solid or liquid chemicals which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities
  
  - Divided into 3 categories

Physical Hazards ...

- **Corrosive to Metals** “means a chemical which by chemical action will materially damage, or even destroy, metals”
  - One category.

- **Organic Peroxides**
  - Organic liquids or solids that can decompose explosively, burn rapidly, be sensitive to friction and react dangerously with other chemicals.
  - 7 categories similar to those in transport sector
As discussed in the BSU Hazard Communication Program, under the new 2012 HazCom Standard incorporating the Globally Harmonized System of Classification, the format of the 16-section Safety Data Sheet 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 contain Sections 12-15, only to be consistent with the United Nations' Globally Harmonized System of Classification and Labeling 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. The OSHA Brief, reproduced on the following pages, describes the information that may be located in each of the above Sections.
Hazard Communication Standard: Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., fire fighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below:

### Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- **Product Identifier** used on the label and any other common names or synonyms by which the substance is known.
- **Name, address, phone number** of the manufacturer, importer, or other responsible party, and emergency phone number.
- **Recommended use** of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).
Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame)).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances
- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures
- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
  - Present above their cut-off/concentration limits or
  - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
  - A trade secret claim is made,
  - There is batch-to-batch variation, or
  - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed
- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

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1Chemical, as defined in the HCS, is any substance, or mixture of substances.
### Section 4: First-Aid Measures
This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:
- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

### Section 5: Fire-Fighting Measures
This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:
- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

### Section 6: Accidental Release Measures
This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:
- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up).

### Section 7: Handling and Storage
This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:
- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements).
Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Odor;
- Odor threshold;
- pH;
- Melting point/freezing point;
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Upper/lower flammability or explosive limits;
- Vapor pressure;
- Vapor density;
- Relative density;
- Solubility(ies);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.
Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

Reactivity
- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

Chemical stability
- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

Other
- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA.
Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient ($K_{ow}$) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities.

Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)$^2$.
- UN proper shipping name$^2$.
- Transport hazard class(es)$^2$.
- Packing group number, if applicable, based on the degree of hazard$^2$.
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78$^3$ and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).


$^3$MARPOL 73/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended.
Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixture (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations).

Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

Employer Responsibilities

Employers must ensure that the SDSs are readily accessible to employees for all hazardous chemicals in their workplace. This may be done in many ways. For example, employers may keep the SDSs in a binder or on computers as long as the employees have immediate access to the information without leaving their work area when needed and a back-up is available for rapid access to the SDS in the case of a power outage or other emergency. Furthermore, employers may want to designate a person(s) responsible for obtaining and maintaining the SDSs. If the employer does not have an SDS, the employer or designated person(s) should contact the manufacturer to obtain one.

References


These references and other information related to the revised Hazard Communication Standard can be found on OSHA's Hazard Communication Safety and Health Topics page, located at: http://www.osha.gov/dsg/hazcom/index.html.

Disclaimer: This brief provides a general overview of the safety data sheet requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(g) and Appendix D of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements. Please note that states with OSHA-approved state plans may have additional requirements for chemical safety data sheets, outside of those outlined above. For more information on those standards, please visit: http://www.osha.gov/dts/cps/osp/statestandards.html.

This is one in a series of informational briefs highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.
Appendix H: *Container Labels Under the (GHS) Hazard Communication Standard: Standard Elements*
As discussed in the BSU Hazard Communication Program, under the new 2012 HazCom Standard incorporating the Globally Harmonized System of Classification, the format and content of the required hazardous chemical and product container labels and elements to be displayed are standardized.

The following OSHA publication provides additional information on labels and the associated pictograms.
Hazard Communication Standard: Labels and Pictograms

OSHA has adopted new hazardous chemical labeling requirements as a part of its recent revision of the Hazard Communication Standard, 29 CFR 1910.1200 (HCS), bringing it into alignment with the United Nations’ Globally Harmonized System of Classification and Labeling of Chemicals (GHS). These changes will help ensure improved quality and consistency in the classification and labeling of all chemicals, and will also enhance worker comprehension. As a result, workers will have better information available on the safe handling and use of hazardous chemicals, thereby allowing them to avoid injuries and illnesses related to exposures to hazardous chemicals.

The revised HCS changes the existing Hazard Communication Standard (HCS/HazCom 1994) from a performance-based standard to one that has more structured requirements for the labeling of chemicals. The revised standard requires that information about chemical hazards be conveyed on labels using quick visual notations to alert the user, providing immediate recognition of the hazards. Labels must also provide instructions on how to handle the chemical so that chemical users are informed about how to protect themselves.

The label provides information to the workers on the specific hazardous chemical. While labels provide important information for anyone who handles, uses, stores, and transports hazardous chemicals, they are limited by design in the amount of information they can provide. Safety Data Sheets (SDSes), which must accompany hazardous chemicals, are the more complete resource for details regarding hazardous chemicals. The revised standard also requires the use of a 16-section safety data sheet format, which provides detailed information regarding the chemical. There is a separate OSHA Brief on SDSes that provides information on the new SDS requirements.

All hazardous chemicals shipped after June 1, 2015, must be labeled with specified elements including pictograms, signal words and hazard and precautionary statements. However, manufacturers, importers, and distributors may start using the new labeling system in the revised HCS before the June 1, 2015 effective date if they so choose. Until the June 1, 2015 effective date, manufacturers, importers and distributors may maintain compliance with the requirements of HazCom 1994 or the revised standard. Distributors may continue to ship containers labeled by manufacturers or importers (but not by the distributor themselves) in compliance with the HazCom 1994 until December 1, 2015.

This document is designed to inform chemical receivers, chemical purchasers, and trainers about the label requirements. It explains the new labeling elements, identifies what goes on a label, and describes what pictograms are and how to use them.

Label Requirements
Labels, as defined in the HCS, are an appropriate group of written, printed or graphic informational elements concerning a hazardous chemical that are affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

The HCS requires chemical manufacturers, importers, or distributors to ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information: product identifier; signal word; hazard statement(s); precautionary

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statement(s); and pictogram(s); and name, address and telephone number of the chemical manufacturer, importer, or other responsible party.

**Labels for a hazardous chemical must contain:**

- Name, Address and Telephone Number
- Product Identifier
- Signal Word
- Hazard Statement(s)
- Precautionary Statement(s)
- Pictogram(s)

To develop labels under the revised HCS, manufacturers, importers and distributors must first identify and classify the chemical hazard(s). Appendices A, B, and C are all mandatory. The classification criteria for health hazards are in Appendix A and the criteria for physical hazards are presented in Appendix B of the revised Hazard Communication Standard. After classifying the hazardous chemicals, the manufacturer, importer or distributor then consults Appendix C to determine the appropriate pictograms, signal words, and hazard and precautionary statement(s), for the chemical label. Once this information has been identified and gathered, then a label may be created.

**Label Elements**

The HCS now requires the following elements on labels of hazardous chemicals:

- **Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party.

- **Product Identifier** is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in section 1 of the SDS.

- **Signal Words** are used to indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. There are only two words used as signal words, “Danger” and “Warning.” Within a specific hazard class, “Danger” is used for the more severe hazards and “Warning” is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” should appear on the label.

- **Hazard Statements** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it.

- **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure emergency response, and first-aid); storage; and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: "Do not breathe dust/fume/gas/mist/ vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national and international regulations."

A forward slash (/) designates that the classifier can choose one of the precautionary statements. In the example...
above, the label could state, “Do not breathe vapors or spray. Get medical attention if you feel unwell. Dispose of contents in accordance with local/regional/national/international regulations.” See Examples 1 and 2A of this document as an example.

In most cases, the precautionary statements are independent. However, OSHA does allow flexibility for applying precautionary statements to the label, such as combining statements, using an order of precedence or eliminating an inappropriate statement.

Precautionary statements may be combined on the label to save on space and improve readability. For example, “Keep away from heat, spark and open flames,” “Store in a well-ventilated place,” and “Keep cool” may be combined to read: “Keep away from heat, sparks and open flames and store in a cool, well-ventilated place.” Where a chemical is classified for a number of hazards and the precautionary statements are similar, the most stringent statements must be included on the label. In this case, the chemical manufacturer, importer, or distributor may impose an order of precedence where phrases concerning response require rapid action to ensure the health and safety of the exposed person. In the self-reactive hazard category Types C, D, E or F, three of the four precautionary statements for prevention are:

- “Keep away from heat/sparks/open flame/ hot surfaces. - No Smoking.”
- “Keep/Store away from clothing / combustible materials”;
- “Keep only in original container.”

These three precautionary statements could be combined to read: “Keep in original container and away from heat, open flames, combustible materials and hot surfaces. - No Smoking.”

Finally, a manufacturer or importer may eliminate a precautionary statement if it can demonstrate that the statement is inappropriate.

- **Supplementary Information.** The label producer may provide additional instructions or information that it deems helpful. It may also list any hazards not otherwise classified under this portion of the label. This section must also identify the percentage of ingredient(s) of unknown acute toxicity when it is present in a concentration of ≥1% (and the classification is not based on testing the mixture as a whole). If an employer decides to include additional information regarding the chemical that is above and beyond what the standard requires, it may list this information under what is considered “supplementary information.” There is also no required format for how a workplace label must look and no particular format an employer has to use; however, it cannot contradict or detract from the required information.

An example of an item that may be considered supplementary is the personal protective equipment (PPE) pictogram indicating what workers handling the chemical may need to wear to protect themselves. For example, the Hazardous Materials Information System (HMIS) pictogram of a person wearing goggles may be listed. Other supplementary information may include directions of use, expiration date, or fill date, all of which may provide additional information specific to the process in which the chemical is used.

- Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.

The pictograms OSHA has adopted improve worker safety and health, conform with the GHS, and are used worldwide.
While the GHS uses a total of nine pictograms, OSHA will only enforce the use of eight. The environmental pictogram is not mandatory but may be used to provide additional information. Workers may see the ninth symbol on a label because label preparers may choose to add the environment pictogram as supplementary information. Figure 1 shows the symbol for each pictogram, the written name for each pictogram, and the hazards associated with each of the pictograms. Most of the symbols are already used for transportation and many chemical users may be familiar with them.

**Figure 1: Pictograms and Hazards**

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flame</th>
<th>Exclamation Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenic</td>
<td>Flammables</td>
<td>Irritant (skin and eye)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Pyrophorics</td>
<td>Skin Sensitizer</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Self-Heating</td>
<td>Acute Toxicity (normal)</td>
</tr>
<tr>
<td>Respiratory Sensitizer</td>
<td>Exits Flammable Gas</td>
<td>Narcotic Effects</td>
</tr>
<tr>
<td>Target Organ Toxicity</td>
<td>Self-Reactives</td>
<td>Respiratory Tract Irritant</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Organic Peroxides</td>
<td>Hazardous to Organs/Layer (Non-Mandatory)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gas Cylinder</th>
<th>Corrosion</th>
<th>Exploding Bomb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases Under Pressure</td>
<td>Skin Corrosion/ Burns</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>Eye Damage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corrosive to Metals</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flame Over Circle</th>
<th>Environment (Non-Mandatory)</th>
<th>Shell and Crossbones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidizers</td>
<td>Aquatic Toxicity</td>
<td>Acute Toxicity (toxic or toxic)</td>
</tr>
</tbody>
</table>

It is important to note that the OSHA pictograms do not replace the diamond-shaped labels that the U.S. Department of Transportation (DOT) requires for the transport of chemicals, including chemical drums, chemical totes, tanks or other containers. Those labels must be on the external part of a shipped container and must meet the DOT requirements set forth in 49 CFR 172, Subpart E. If a label has a DOT transport pictogram, Appendix C.2.3.3 states that the corresponding HCS pictogram shall not appear. However, DOT does not view the HCS pictogram as a conflict and for some international trade both pictograms may need to be present on the label. Therefore, OSHA intends to revise C.2.3.3. In the meantime, the agency will allow both DOT and HCS pictograms for the same hazard on a label. While the DOT diamond label is required for all hazardous chemicals on the outside shipping containers, chemicals in smaller containers inside the larger shipped container do not require the DOT diamond but do require the OSHA pictograms. (See Example 2.)

Labels must be legible, in English, and prominently displayed. Other languages may be displayed in addition to English. Chemical manufacturers, importers, and distributors who become newly aware of any significant information regarding the hazards of a chemical must revise the label within six months.

**Employer Responsibilities**

Employers are responsible for maintaining the labels on the containers, including, but not limited to, tanks, totes, and drums. This means that labels must be maintained on chemicals in a manner which continues to be legible and the pertinent information (such as the hazards and directions for use) does not get defaced (i.e., fade, get washed off) or removed in any way.

The employer is not responsible for updating labels on shipped containers, even if the shipped containers are labeled under HazCom 1994. The employer must relabel items if the labels are removed or defaced. However, if the employer is aware of newly-identified hazards that are not disclosed on the label, the employer must ensure that the workers are aware of the hazards as discussed below under workplace labels.

**Workplace Labels**

OSHA has not changed the general requirements for workplace labeling. Employers have the option to create their own workplace labels. They can either provide all of the required information that is on the
label from the chemical manufacturer or, the product identifier and words, pictures, symbols or a combination thereof, which in combination with other information immediately available to employees, provide specific information regarding the hazards of the chemicals.

If an employer has an in-plant or workplace system of labeling that meets the requirements of HazCom 1994, the employer may continue to use this system in the workplace as long as this system, in conjunction with other information immediately available to the employees, provides the employees with the information on all of the health and physical hazards of the hazardous chemical. This workplace labeling system may include signs, placards, process sheets, batch tickets, operating procedures, or other such written materials to identify hazardous chemicals. Any of these labeling methods or a combination thereof may be used instead of a label from the manufacturer, importer or distributor as long as the employees have immediate access to all of the information about the hazards of the chemical. Workplace labels must be in English. Other languages may be added to the label if applicable.

If the employer chooses to use the pictograms that appear in Appendix C on the workplace (or in-plant) labels, these pictograms may have a black border, rather than a red border.

Employers may use additional instructional symbols that are not included in OSHA’s HCS pictograms on the workplace labels. An example of an instructional pictogram is a person with goggles, denoting that goggles must be worn while handling the given chemical. Including both types of pictograms on workplace labels is acceptable. The same is true if the employer wants to list environmental pictograms or PPE pictograms from the HMIS to identify protective measures for those handling the chemical.

Employers may continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or HMIS requirements for workplace labels as long as they are consistent with the requirements of the Hazard Communication Standard and the employees have immediate access to the specific hazard information as discussed above. An employer using NFPA or HMIS labeling must, through training, ensure that its employees are fully aware of the hazards of the chemicals used.

If an employer transfers hazardous chemicals from a labeled container to a portable container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container.

Sample Labels
The following examples demonstrate how a manufacturer or importer may display the appropriate information on the label. As mentioned above, once the manufacturer determines the classification of the chemical (class and category of each hazard) using Appendices A and B, it would determine the required pictograms, signal words, hazard statements, and precautionary statements using Appendix C. The final step is to put the information on the label.

The examples below show what a sample label might look like under the revised HCS requirements. The examples break the labeling out into “steps” to show the order of information gathering and how label creation occurs. Step 1 is performing classification; step 2 is gathering full label information; and step 3 is creating the label.

These examples are for informational purposes only and are not meant to represent the only labels manufacturers, importers and distributors may create for these hazards.
Example 1: This example demonstrates a simple label.

The Substance:
HS85
Batch Number: 85L6543

Step 1: Perform Classification
Class: Acute Oral Toxicity; Category 4

Step 2: Gather Labeling Information
Pictograms:

Signal Word:
WARNING

Hazard Statements:
Harmful if Swallowed

Precautionary Statements:
Prevention:
• Wash hands and face thoroughly after handling.
• Do not eat, drink or smoke when using this product.

Response:
• If swallowed: Call a doctor if you feel unwell.2
• Rinse mouth

Storage:
None specified

Disposal:
• Dispose of contents/container in accordance with local/regional/national/ international regulations.3

Step 3: Create the Label
Putting together the above information on HS85, a label might list the following information:

Example 1: HS85 Label

HS85
Batch number: 85L6543

Warning
Harmful if swallowed

Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Dispose of contents/container in accordance with local, state and federal regulations.

First aid:
If swallowed: Call a doctor if you feel unwell. Rinse mouth.

GHS Example Company, 123 Global Circle, Anyville, NY 130XX
Telephone: (888) 888-8888

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2 The manufacturer of this chemical determined that calling a doctor was the most appropriate emergency medical advice; therefore, it is listed as part of the first-aid procedures.
3 The downstream users must familiarize themselves with the proper disposal methods in accordance with local, regional, state and federal regulations. It is impractical to expect the label preparer to list all potential regulations that exist.
Example 2: This example demonstrates a more complex label.

Example 2 is for a substance that is a severe physical and health hazard. For shipping packages of chemicals that will be transported in the United States (i.e., drums, totes, tanks, etc.), the U.S. DOT requires a DOT label(s) on the outside container(s) for hazardous chemicals. Two versions of this label are presented below to demonstrate the difference between an OSHA label with pictograms from the HCS and a DOT label required for transport of a shipping container.

**The Substance:**
OX1252 (disodiumflammy)
CAS number: 111-11-1xx

**Step 1: Perform Classification**
Class: Oxidizing Solid, Category 1
Class: Skin Corrosive, Category 1A

**Step 2: Gather Labeling Information**
Pictograms:

[Chemical symbols and pictograms]

**Signal Word:**
DANGER

**Hazard Statements:**
- May cause fire or explosion; strong oxidizer
- Causes severe skin burns and eye damage

**Precautionary Statements:**
Prevention:
- Keep away from heat.
- Keep away from clothing and other combustible materials.
- Take any precaution to avoid mixing with combustibles.
- Wear protective neoprene gloves, safety goggles and face shield with chin guard.
- Wear fire/flame resistant clothing.
- Do not breathe dust or mists.
- Wash arms, hands and face thoroughly after handling.

Response:
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- Immediately call poison center.4

**Specific Treatment:**
Treat with doctor-prescribed burn cream.5

In case of fire:
Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Storage:
Store locked up.

Disposal:
- Dispose of contents/container in accordance with local/regional/national/international regulations.2

**Step 3: Create the Label**
Putting together the above information on OX1252, a label might list the following information:

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4 In this example, the manufacturer determined that calling a poison control center is the most appropriate emergency medical advice.
5 Not all SDSs will have direction for “specific treatment” on the label. This is only if the manufacturer specifically notes a certain treatment that needs to be used to treat a worker who has been exposed to this chemical.
Example 2A: OXI252 Label inner package label with OSHA pictograms

OXI252  
(disodiumflammy)  
CAS #: 111-11-1xx

Danger  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flash resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

First aid:  
IF ON SKIN (or hair) or clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

Fire:  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Great Chemical Company, 56 Main Street, Anywhere, CT 064XX  
Telephone (888) 777-8888

Example 2B: OXI252 Label meeting DOT requirements for shipping

OXI252  
(disodiumflammy)  
CAS #: 111-11-1xx

Danger  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flash resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

First aid:  
IF ON SKIN (or hair) or clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

Fire:  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

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6 There are occasions where label preparers may combine statements on the label. In this case the similar statements were combined and the most stringent were listed. For example, the first-aid precautionary statements were combined for exposure to skin, hair and clothing.

7 DOT Labels must comply with the size requirements presented in 49 CFR 172.
For more detailed information about labels and Safety Data Sheets (SDSs) under the revised Hazard Communication Standard, please refer to 29 CFR 1910.1200 - paragraphs (f) and (g), and Appendix C.


Disclaimer: This OSHA Brief provides a general overview of the label requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(f) and Appendix C of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements.