2023 HAZARD COMMUNICATION PLAN

OFFICE OF SAFETY AND EMERGENCY MANAGEMENT

NORTHERN KENTUCKY UNIVERSITY

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NORTHERN KENTUCKY UNIVERSITY
POLICY LINK: **CHEMICAL SAFETY POLICY**
ISSUE DATE: **08/01/2017**
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TITLE: **HAZARD COMMUNICATION PLAN**

I. PURPOSE

The University has developed this plan to provide information about hazardous chemicals used in the workplace and methods used to convey those hazards as well as the appropriate preventative and protective measures to affected personnel. This plan is designed to comply with the requirements of Kentucky Administrative Regulations: 803 KAR 2:320.

It covers 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 foreseeable emergencies, e.g., an equipment malfunction resulting in an uncontrolled release of a hazardous chemical. Typically, covered chemicals include any liquid chemicals, such as solvents, cleaners, adhesives, and paints; but also include gases and solid materials, such as welding consumables, bricks, wood dust and other building materials when use of those materials by an employee can produce a known exposure to a hazardous material. Consumer products are not included as long as they are used only in the same frequency and manner as a typical consumer.

II. SCOPE AND APPLICATION

This plan applies to faculty, staff, student employees, and visitors to the University. University personnel engaged in the laboratory use of hazardous chemicals are covered by the University's Laboratory Chemical Hygiene Plan, available through Safety and Emergency Management.

Generally, this plan does **NOT** apply to office workers or other employee groups whose jobs would not be likely to involve chemical exposures or who may encounter hazardous chemicals only in non-routine, isolated instances. Employees within these job classifications would, however, be covered if their normal work routine required them to walk through areas where hazardous chemicals are used or stored.

III. SUMMARY OF REQUIREMENTS

Employers using hazardous chemicals must meet the following requirements. (Note: Refer to section II on Hazardous Determination to determine if the chemicals that are used in your department or work area are considered hazardous). The requirements are outlined as follows:

1. **Proper Labeling**–All containers of hazardous chemicals entering the workplace from suppliers must be properly labeled, tagged, or marked with the following information: product identifier; signal word; hazard statement(s); precautionary statement(s); and pictogram(s); and name, address, and telephone number of the chemical manufacturer, importer, or other responsible party. Any time a hazardous chemical is transferred from its original container to a secondary container, it must be labeled with the identity of the hazardous chemical and the appropriate hazard warning as it is specified on the original container.
2. **Availability of Safety Data Sheets**–A safety data sheet is a written document that contains information on the chemical and physical dangers, safety procedures, and emergency response techniques for a particular chemical. Copies of safety data sheets for each hazardous chemical in the workplace shall be readily accessible to employees when they are in their work area(s)

during each work shift. Electronic copies are acceptable as long as employees have access.

3. **Employee Information and Training**–Employees must be provided with information and training on hazardous chemicals in their work area. The training must include an overview of the OSHA Hazard Communication Standard, information about the physical and health hazards of the chemicals in the employee's work area, the measures employees can take to protect themselves such as work practices and personal protective equipment, and the location and details of the written plan.

   Note: More detailed information on each of these requirements is contained in subsequent sections.

IV. IMPLEMENTING THE HAZARD COMMUNICATION PLAN

1. Assignment of Responsibilities

In order to implement a hazard communication plan at Northern Kentucky University, it will be necessary for departments and employees to clearly understand their responsibilities in this implementation process. The assignment of responsibilities is summarized as follows:

A. Department/Unit Responsibilities:

- Identify hazardous chemicals and prepare an accurate inventory.
- Solicit and maintain Safety Data Sheets (SDS)
- Identify affected employees.
- Train employees, initially and when new hazard introduced.
- Ensure all hazardous chemicals are labeled and labels are maintained.
- Create a departmental Hazard Communication Plan
- Provide employee access to Safety Data Sheets and Hazard Communication Plan

B. Employee Responsibilities:

- Attend training programs as scheduled by supervisor.
- Read labels and safety data sheets.
- Know where to find information about hazardous chemicals.
- Follow warnings and instructions on labels.
- Use the correct protective equipment when handling hazardous materials.
- Learn emergency procedures.
- Practice sensible, safe work habits.

C. Safety and Emergency Management Responsibilities

- Prepare Summary and Compliance Manual outline for Hazard Communication Standard.
- Maintain resource material for training.
- Provide consultation regarding training content as requested.
- Provide updates on pertinent regulations.
- Provide consultation on general safety, exposure level assessments, industrial hygiene, and other matters of safety in handling hazardous chemicals.

D. Contractor Responsibilities

- Develop and implement their own Hazard Communication Plan.
- Inform Northern Kentucky University personnel of any chemical hazards brought on campus.
- Ensure the proper handling, use, and storage of those chemicals.
- Provide access to SDSs for chemicals used.

- Provide University project managers and Safety and Emergency Management with information concerning hazardous materials before the materials are brought onto campus.

2. Steps to Compliance

A. An inventory of all hazardous chemicals must be completed and maintained by each department, office, or work area. (See section on hazard determination for inventory information).

B. Departments must obtain safety data sheets for all hazardous chemicals in their work area. (See section on safety data sheets located in section VII).

C. Departments must assess the use of secondary containers for hazardous chemicals if necessary and implement a system for required labeling. (See section on labeling located in section VI).

D. Departments will be responsible for arranging and carrying out employee training requirements. Section VIII outlines employee training and a plan for meeting these requirements. General Hazard Communication training is available through the online safety training system. Contact Safety and Emergency Management for information. Departments/supervisors should provide specific chemical training and must document employee training. A sample form is located in appendix B of this manual.

V. HAZARD DETERMINATION

1. Definition of Hazardous Chemical

The Occupational Safety and Health Administration (OSHA) has defined hazardous chemical as "any chemical which is a **physical** or **a health hazard**." This definition is intentionally very broad. It includes chemicals which are combustible liquids, compressed gases, explosives, flammables (aerosols, gases, liquids and solids), organic peroxides, oxidizers, pyrophorics, unstable reactives, and water reactives because they are considered **physical hazards**. In addition, it includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatoxins, nephrotoxins, neurotoxins, agents which act on the blood, and agents which damage the lungs, skin, eyes, or mucous membranes because they are considered **health hazards**.

2. Responsibility for Evaluation

The onus of evaluating hazards is placed on the manufacturers and importers. They are required to evaluate the chemicals they produce, or import, by determining if the chemicals have any physical or health hazards (as described in the previous section). If a chemical meets any of the criteria of a physical or health hazard the manufacturer must label the container with the hazard information. Departments shall examine labels on containers to determine if the label gives any hazard warning information. If it does, it means that the manufacturer has evaluated the chemical or product and determined that it meets OSHA's definition of a hazardous chemical. Any chemical or product that has been determined by the manufacturer to be a hazardous chemical (ie: label gives hazard warning information) must be included in the department's hazard communication plan unless it is exempt. Some types of hazardous chemicals or products are exempt from the Hazard Communication Standard. (See next section to determine exemption).

3. Exemptions From Hazard Communication Plan

The Occupational Safety and Health Administration has exempted the following items from the Hazard Communication Standard:

- Tobacco or tobacco products
- Hazardous waste
- Wood or wood products
- Food, drugs, or cosmetics intended for personal consumption by employees while in the workplace.
- Consumer products that are used in the same normal consumer use (ie: duration and frequency of use no greater than normal consumer).
- Any drug (as defined by FDA) when it is in solid, final form (ie: tablets or pills).
- Any product or chemical that falls into one of the categories listed above should not be included in the hazard communication plan.

However, you should be aware that consumer products are exempt only if they are purchased in quantities or packages that are available to the average consumer and they are used in the same manner that a normal consumer would use them. **Any consumer product that is used frequently, in large quantities, or high concentrations (ie: industrial strength) is not exempt and must be included in the hazard communication plan.**

The following examples illustrate how the consumer products exemption works:

- "White-out" toner/correction fluid which contains solvents is exempt because it is used in consumer quantities.
- Floor strippers (that are commercially available to consumers) bought in 55-gallon drums are not exempt because this size is not normally available to consumers.
- Solvent-based paint bought in gallon cans (or another size that is available to the consumer) is not exempt if the employee using it holds a position where painting is a frequent activity of the job.

4. Inventory of Hazardous Chemicals

A list of the hazardous chemicals present in the workplace must be prepared and maintained in the department's hazard communication plan. Departments should review the information contained in this section on hazard determination before beginning the inventory. Generally, if hazard warning information is given on the label of the container, that chemical or product should be included on the inventory list. It is advisable also to record the classification of the chemical (ie: toxic or poison, corrosive, flammable, combustible, reactive, irritant) on the inventory. The type of training required for employees depends on the hazards of the chemicals in their work area. This information should be on the label.

Note: Departments having hazardous chemicals in many different work areas may choose to have the Hazard Communication Plan cover their entire department. If this is the case, all inventory lists should be labeled with room numbers or the name of the area and placed in the back of this manual.

VI. LABELS AND OTHER FORMS OF WARNING

1. Contents of Labels

The Hazard Communication Standard requires that hazardous chemicals or products be labeled with:

- The identity of the material
- The name and address of the manufacturer or distributor

- Hazard warnings and information

Chemical manufacturers and distributors are required to label each container of a hazardous chemical or product with the information described above. It is then the responsibility of the user to ensure that labels on incoming containers are not destroyed or removed. Some of the types of information that generally are found on labels of hazardous chemicals or products are:

- The identity of the product or its hazardous components
- A signal word, (ie: **Caution, Danger, Warning**)
- A statement of the actual hazard present physical or health (ie: corrosive, flammable, toxic, etc.)
- Route of entry (personal exposure)
- Required personal protective equipment.
- First aid measures in case of exposure
- Spill clean-up procedures and firefighting methods
- Instructions for handling and storage

2. Secondary Containers

Any time a hazardous chemical or product is transferred from its original container to another container, this label must contain two key pieces of information: the identity of the hazardous chemical(s) in the container (e.g., chemical name) and the hazards present. In-house labels may be individually prepared; transcribe information contained on the original container.

No label is required if a hazardous chemical is transferred into a portable container and used immediately by the same employee who dispensed it from the original container and the contents must be used within the work shift.

VII. SAFETY DATA SHEETS

1. Basic Tool of Communication

Safety data sheets (SDS) are written by the chemical manufacturer. They contain information on the chemical and physical dangers, safety procedures, and emergency response techniques.

The information on these sheets is comprehensive; virtually everything that is known about a hazardous chemical or product is on the SDS. The safety data sheet is an essential tool in communicating the hazards of a particular chemical to an employee.

Copies of safety data sheets are required to be readily accessible during each work shift to employees when they are in their work areas.

2. Contents of Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)) 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.

A description of all 16 sections of the SDS, along with their contents, is presented in Appendix D.

3. Obtaining Safety Data Sheets

Even though manufacturers and distributors are required to provide safety data sheets for each hazardous chemical they produce, many of the suppliers for Northern Kentucky University have different mechanisms for sending safety data sheets.

Some suppliers have sent safety data sheets directly to Safety and Emergency Management. Other suppliers have established a policy of only sending a single copy of the safety data sheet, even if the chemical is purchased on a regular basis by many different departments. All departments should ask suppliers either to send safety data sheets with the shipments or to fax the SDS prior to the shipment. Since it is likely that some suppliers will not comply with this request, departments should attempt to obtain the safety data sheets by sending a letter directly to the supplier. A sample letter is provided below. Departments should maintain copies of SDS request letters.

Departments may contact the Director of Safety and Emergency Management if unsuccessful in obtaining an SDS through the supplier.

4. Establishing Location for SDS

Safety data sheets must be readily accessible during every work shift to employees in their work areas. In addition, employees must be made aware of where the safety data sheets are being maintained. Therefore, departments need to establish where safety data sheets will be kept and then communicate that location to employees. This information must be documented and placed in this manual.

OSHA has not defined “readily accessible”. However, they have indicated “work area” can be considered one room, a group of rooms or an entire department.

SDS REQUEST Sample Letter

(Date)

(Name)

(Title)

(Company Name)

(Address)

(City, State, Zip Code)

Dear _____ :

Requirements of the OSHA Hazard Communication Standard stipulate that chemical manufacturers/suppliers provide their customers with Safety Data Sheets for each product containing hazardous substances. Therefore, please send Safety Data Sheets for each of the following products:

(Names of Products)

Sincerely,

VIII. EMPLOYEE INFORMATION AND TRAINING

1. Required Content

The Hazards Communication Standard is intended to inform employees about the potential health hazards of exposure to chemicals in the workplace. Training provides employees with

enough information to allow them to make informed decisions about personal risks of their work and the need for safe work practices.

The OSHA standard requires certain topics to be covered in the employee information and training program. Specifically, they are:

- Overview of the Hazard Communication Standard.
- The physical and health hazards of the chemicals in the work area.
- The measures employees can take to protect themselves from these hazards including operational procedures, appropriate work practices, emergency procedures and personal protective equipment (PPE).
- Explanation of safety data sheets and the information they convey.
- Explanation of container labeling systems and secondary container labeling practice.s
- Identity of operations in the workplace where hazardous chemicals are present.
- Details on the availability and locations of the hazardous chemical inventory, safety data sheets, and written Hazard Communication Plan.

2. **Identifying Employees For Training**

- All employees (full and part-time) must be included in the training program if they **use hazardous chemicals and/or hazardous chemicals are present in their work area.** This includes graduate assistants and student workers. An employee does not necessarily have to handle or work directly with a hazardous chemical for the training requirement to apply. The Hazard Communication Standard requires employees to be trained on the hazardous chemicals in their work area.

- The following steps will allow departments/supervisors to determine which employees will have to be included in the training program.
  - Identify all rooms, offices, labs, etc. where hazardous chemicals are present.
  - Determine which employees are in those areas and/or who perform the majority of their job in those areas.
  - Employees identified in step #2 must be included in the training program regarding hazardous chemicals in their area.

3. **Frequency of Training**

Training is required for all employees potentially exposed to hazardous chemicals found in their work area. These employees are to be trained initially and whenever a new hazard is introduced into their work area. If a new hazard is introduced in the work area, training will have to be given for the new hazard. Otherwise, it will only be a one-time requirement.

Note: A new hazard is not necessarily a new chemical. If a new solvent is brought into the workplace with hazards similar to chemicals for which training already has been done, no new training is required.

4. **Documentation of Training**

All employee training must be documented. The training record provided in Attachment B should be completed by department/supervisor. These training records should be kept with this manual.

5. **Non-Routine Tasks**

Employees performing “non-routine” tasks can be exposed to chemicals from unusual and unsuspected sources. Written procedures shall be developed for every “non-routine” task by the supervisor of the employees who will perform the task. The information will include chemical hazards associated with the performance of the tasks and appropriate protective measures required to perform the task safely. The procedures shall be included (or specific location referenced) in the department’s copy of the Hazard Communication Plan. Safety and Emergency Management can provide guidance and advice upon request.

APPENDIX A: Employee/Student Safety Checklist

	Employee/Student Checklist	Supervisor Initials
Individual employee's responsibilities		
Location of Chemical Hygiene/HazCom Plan		
Location of Chemical Inventory and Safety Data Sheets and other information available relating to hazardous chemicals found in the work area		
Minimum personal protective equipment requirements		
Specific personal protective equipment requirements		
Injury and illness reporting		
Non-injury incident reporting		
Location and use of fire extinguishers		
Location and use of eyewash and safety shower equipment		
Location of first aid kits		
Housekeeping		
Rules on food/beverage consumption in laboratories		
Respirator use		
Hazards of the job (chemical, biological, radioactive materials, mechanical, electrical, etc.)		
Spill Control, cleanup procedures, etc.		
Fire and Disaster Evacuation Procedures		
Training Requirements		

The items above have been explained to me by my supervisor. I understand the information provided and will follow the policies and procedures as required.

Department _____

Employee Signature _____

Supervisor Signature _____

APPENDIX B: HAZARD COMMUNICATION TRAINING

	Employee/Student Checklist	Supervisor Initials
The location, availability, and requirements of the Hazard Communication Plan has been made known to me.		
The location and availability of the chemical inventory for my area was made known to me.		
The location and availability for the Safety Data Sheets (SDS) for the chemicals that I will be working with was made known to me.		
An explanation of how to use the information on the SDS was provided to me.		
I was informed of the health and physical hazards and location of the chemicals in my work area. Any special precautions required for chemicals used in my area were also explained to me.		
Any Personal Protective Equipment required for chemicals used in my area was provided to me and its proper use and maintenance explained.		
Training on reading and understanding chemical labels was provided.		
Methods to lessen or prevent the exposure of chemicals through administrative, engineering, and the use of protective equipment were reviewed.		
Methods and observation techniques used to detect the presence or release of a hazardous chemical were explained		
Contingency plans for medical, accident, and spill response were explained.		

The items above have been explained to me by my supervisor. I understand the information provided and will follow the policies and procedures as required.

Department _____

Employee Signature _____

Supervisor Signature _____

APPENDIX C

DEFINITIONS AND TERMS

Hazard Statements

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 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.

Maintained Labels

Proper 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.

Precautionary Statements

Describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to hazardous chemicals 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 several 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.

Pictograms

Graphic symbols are 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 to the GHS, and are used worldwide. Pictograms are shown in Appendix E

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. Appendix E 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.

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. Chemicals in smaller containers inside the larger shipped container do not require the DOT diamond but do require the OSHA pictograms.

All required 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.

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.

Safety Data Sheet

A safety data sheet is a written document that contains information on the chemical and physical dangers, safety procedures, and emergency response techniques for a particular chemical.

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.

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 Identification 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.

APPENDIX D

Hazard Communication Standard: Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)) 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., firefighting). 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 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[1]).
- 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 names 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.

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.);

- Upper/lower flammability or explosive limits;
- Odor;
- Vapor pressure;
- Odor threshold;
- Vapor density;
- pH;
- Relative density;
- Melting point/freezing point;
- Solubility(ies);
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- 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 others. 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.
- An 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 (Kow) 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)[1].
- UN proper shipping name[1].
- Transport hazard class(es)[1].
- 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).

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 mixtures (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.

APPENDIX E

GHS - Hazard Pictograms and Related Hazard Classes

		
Exploding Bomb • Explosives • Self-reactives • Organic Peroxides	**Corrosion** • Skin corrosion/burns • Eye damage • Corrosive to metals	**Flame Over Circle** • Oxidizing gases • Oxidizing liquids • Oxidizing solids
		
Gas Cylinder • Gases under pressure	**Enviroment** • Aquatic toxicity	**Skull & Crossbones** • Acute toxicity (fatal or toxic)
		
Exclamation Mark • Irritant (eye & skin) • Skin sensitizer • Acute toxicity • Narcotic effects • Respiratory tract irritant • Hazardous to ozone layer (non-mandatory)	**Health Hazard** • Carcinogen • Mutagenicity • Reprodcutive toxicity • Respiratory sensitizer • Target organ toxicity • Aspiration toxicity	**Flame** • Flammables • Pyrophorics • Self-heating • Emits flammable gas • Self-reactives • Organic peroxides