HAZARD COMMUNICATION

Wright State University

Department of Environmental Health and Safety

HAZARD COMMUNICATION STANDARD

GLOBAL HARMONIZATION SYSTEM (GHS)

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VERSION HISTORY			
Version	Description of Change	Author	Effective Date
Basic	Updated content to comply with 2012 Hazard Communication Standard Revision; Revised format and editorial updates	M.Markopoulos	06-01-2016

REFERENCE DOCUMENTS	
Document	Title
	Record Retention
	Access to Employee Records
	Ohio Revised Code Chapter 4167, "Public Employee Risk Reduction Program (PERRP).
	1910.119 Process Safety Management of Highly Hazardous Chemicals
	1910.120 Hazardous Waste Operations and Emergency Response
	1910.1001 Asbestos
	1910.1020 Access to Employee Exposure and Medical Records
	1910.1026 Chromium VI
	1910.1027 Cadmium
	1910.1028 Benzene
	1910.1047 Ethylene Oxide
	1910.1048 Formaldehyde
	1910.1050 Methylenedianiline

	1910.1051 1,3-Butadiene

If any process in this document conflicts with any document in OSHA Hazard Communication Standard this document shall be superseded by the OSHA Hazard Communication Standard document. Any reference document external to OSHA shall be monitored by the Process Owner for current versioning.

INTRODUCTION

Wright State University is committed to preventing accidents and ensuring the safety and health of our students, employees, staff, and faculty. We will comply with all applicable federal and state health and safety rules. Success of this plan requires the joint efforts of administration, managers and supervisors, Environmental Health and Safety and Wright State employees.

Under this Program employees are informed of the contents of the OSHA Hazard Communications Standard, the hazardous properties of chemicals with which they work, safe handling procedures and measures to take to protect themselves from these chemicals. These chemicals may be physical or health-related.

This information is communicated in three primary methods:

Safety Data Sheets (SDSs),
Warning labels and signs, and
Training employees on chemical hazards in the workplace.

This Written Hazard Communication Plan is available at the following location for review by all employees:

Wright State University
Department of Environmental Health and Safety
047 Biological Sciences II
Dayton OH 45435
Phone 937-775-2215

PURPOSE

The purpose of the hazard communication standard is to ensure that the hazards of all chemicals produced or imported are classified, and the information concerning the classified hazards is transmitted to employers and employees. The requirements of this program are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 3. The transmittal of information includes container labeling and other forms of warning, safety data sheets and employee training. This program is designed to comply with the Public Employment Risk Reduction Program (PERRP) [Ohio House Bill 308 an Act] and the Occupational Safety and Health Administration (OSHA) Hazard Communication Program (HCS2012)

SCOPE

Employees Covered

The Hazard Communication Standard applies to any hazardous chemical present in the workplace in a manner that employees may be exposed under normal conditions of use and foreseeable emergencies. Workers who encounter hazardous chemicals only in non-routine, isolated instances, are not covered by this Program.

Research Laboratory Exemption

This program does not apply to research laboratories where small quantities of chemical are used on a non-production basis. Instead, such laboratories must follow the OSHA Laboratory Standard (29 CFR 1910.1450), and are covered by the Wright State University Laboratory Safety Manual. A copy of the Plan is accessible online at Wright State University's Environmental Health and Safety website.

A written, hard copy of Wright State's Laboratory Safety Manual may be obtained by making a request to:

Wright State University
Department of Environmental Health and Safety
047 Biological Sciences II
Dayton OH 45435
Phone 937-775-2215

Substances Covered

All substances located at Wright State University which pose a physical or health hazard.

Hazardous substances

Hazardous substances can include:

- *Liquids in containers*
- *Substances in pipes*
- *Chemicals generated in work operations such as welding fumes and exhaust fumes*
- *Solids, gases and vapors*

Items

Items that are covered by the Hazard Communication Standard include:

- *Bricks*
- *Metal ingot*
- *Wood products where the hazard is not just combustion (e.g., wood that is cut is covered wince the sawdust created during the cut creates a respiratory hazard);*
- *Hazardous drugs not in final form or a solid (e.g., drugs that are crushed or dissolved prior to administration);*
- *Combustible dusts;*
- *Simple asphyxiants;*
- *Welding rods/wire;*
- *Acid batteries;*
- *Consumer products not used in the quantities and the manner that a consumer would use them; and*
- *Oil and gas products; the producers are considered manufacturers under the HCS.*

If there is no hazard, the rule does not cover the chemical.

All hazardous materials which pose a physical or health hazard are included except those specifically exempted by this Standard.

Exempted substances

Exempted substances, as defined by OSHA, include:

- *Hazardous waste as defined by Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act*
- *Tobacco or tobacco products*
- *Wood or wood products*
- *Articles or manufactured items that do not pose a physical or health hazard when used normally*
- *Food or alcoholic beverages, such as those sold in grocery stores of restaurants, or consumed by employees in the workplace.*

- *Any drug as defined in the Federal Food, Drug, and Cosmetic Act when it is in solid, final form such as tablets or pills; retail, over-the-counter drugs, and other drugs, such as first aid supplies, intended for employees in the workplace.*
- *Cosmetics packaged for retail sale to consumers and cosmetics used by employees in the workplace*
- *Any consumer product or hazardous substance as defined in the Consumer Product Safety Act and Federal Hazardous Substance Act, where the employer can show that it is used in the workplace for the purpose intended by the manufacturer and resulting in an exposure equivalent to the range of exposures (duration and frequency) that could reasonably be experienced by consumers*
- *Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or heal hazard*
- *Ionizing and nonionizing radiation*
- *Biological hazards*

Special Requirements for Laboratories

- *Labels on incoming containers of hazardous chemicals are not removed or defaced.*
- *SDSs that are received with incoming shipments of hazardous chemicals must be maintained and be readily accessible during each work shift to laboratory employees when they are in their work area.*
- *Laboratory employees must be provided information and training as required by the OSHA Hazard Communication Standard 29 CFR 1910.1200.*

Special Requirements for Laboratories Employees that Ship Hazardous Chemicals

Ensure that any containers of hazardous chemicals leaving the laboratory are:

- *labeled as required by the Hazard Communication Standard and*
- *a SDS is provided to distributors and other employees.*

Special Requirements for Working with Sealed Containers of Hazardous Chemicals

- *SDSs must be maintained for incoming shipments of the sealed containers of hazardous chemicals,*

- *SDSs must be readily accessible to workers, and*
- *Workers must be provided information and training as required by the Hazard Communication Standard.*

Special Requirements for OSHA Defined Specific Substances

Use of any of the following materials may be subject to specific occupational safety and health standards:

2-Acetylaminofluorene
Acrylonitrile
4-Aminodiphenyl
Asbestos
Benzene
Benzidine
1,3-Butadiene
Cadmium
bis-Chloromethyl ether
Chromium (VI)
Coke oven emissions
3,3'-Dichlorobenzidine (and its salts)
1,2-Dibromo-3-Chloropropane
4-Dimethylaminoazobenzene
Ethyleneimine
Ethylene oxide
Formaldehyde
Inorganic arsenic
Methyl Chloromethyl Ether
Methylene chloride
Methylenedianiline
alpha-Naphthylamine
beta-Naphthylamine
4-Nitrobiphenyl
N-Nitrosodimethylaminebeta-Propiolactone
Vinyl chloride

Users of these materials must comply with the provisions of the applicable substance-specific standard if employee exposure routinely exceeds the OSHA-mandated permissible exposure limit (or Action Level, if specified).

Copies of these standards may be obtained from Wright State University Department of Environmental Health and Safety (ehs@wright.edu) or through the OSHA Web site at http://www.osha.gov/

Supervisors may arrange for exposure monitoring by contacting EHS at 937-775-2215 or by E-mail at ehs@wright.edu.

DEFINITIONS

The following terms used in this Hazard Communication Program are defined as follows:

Asbestos-containing material (ACM) means any material containing more than 1% asbestos.

Article means a manufactured item other than a fluid or particle; which

- *is formed to a specific shape or design during manufacture;*
- *has end use functions dependent in whole or in part upon its shape or design during end use; and*
- *under normal circumstances of use does not release more than very small quantities.*

A chair is an article. Wood that is cut during construction of the chair may be considered hazardous due to health effects associated with inhalation of dusts.

Chemical means any element, chemical compound or mixture of elements and/or components.

Chemwatch® - A commercial management system that allows Wright State employees to access electronic copies of SDSs. Assigned WSU Administrators maintain inventories for the products their departments use in an electronic binder, known in the system as an "manifest". General Users, if they choose their department, will have their search initially limited to the Manifest Folder where they will only see the SDSs for the products used by their unit - however, the system also allows the user to search the millions of SDSs available from the vendor. When a manufacturer updates an SDS with new information, the system allows Wright State to instantly update the manifest folder allowing users to view the most up-to-date information available.

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.

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.

Consumer commodity means any article, product, or commodity which is available to consumers; and which is used in the same manner, frequency and duration as the typical consumer.

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.

Employee means a worker who may be exposed to hazardous chemicals during normal operating conditions or during foreseeable emergencies. Workers such as office workers who encounter hazardous chemicals only in non-routine, isolated instances are not covered by the Hazard Communication Program.

Exposure or exposed means that an employee in the course of employment comes in contact (inhalation, ingestion, skin contact or absorption) with a chemical that is a physical or health hazard; and includes potential (including accidental) exposure.

Foreseeable emergency means any potential occurrence such as, but not limited to equipment failure, container rupture or failure of control equipment that 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 a physical or 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.

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.

Non-routine tasks mean tasks involving the use of a hazardous material for a purpose other than that intended (e.g., using gasoline to degrease a stove), or tasks that are not conducted routinely and that involve the use of a hazardous material (e.g., cleaning a boiler's combustion chamber).

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.

Project manager means the Wright State employee responsible for directing and overseeing the activities of an outside contractor.

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 the OSHA Hazard Communication Standard.

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.

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 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 Information means additional instructions or information that it deems helpful as provided by the label producer or manufacturer.

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.

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.

RESPONSIBILITIES

Effective hazard communication can be realized when responsible management and responsive employees work together in developing and implementing an integrated hazard communication program. The Wright State Hazard Communication Plan is performance-based, allowing for flexibility in implementing the program components depending on the needs of the employees within the various work environments. The roles and responsibilities of Wright State management and employees are outlined below.

RESPONSIBLE	ACTIVITIES
DEPARTMENT OF ENVIRONMENTAL HEALTH AND SAFETY	• *Monitor federal regulations and update the Plan to reflect any changes* • *Provide technical guidance and policy interpretation to personnel at all levels of responsibility on matters pertaining to the Wright State Hazard Communication Plan'* • *Develop, administer and update the WSU Hazard Communication Program* • *Manage the Chemwatch® account for WSU.* • *Assure that the Chemwatch® program includes all available electronic safety data sheets (SDS) and material safety data sheets (MSDS) as advised necessary by WSU departments* • *Distribute the Hazard Communication Program to WSU departments;* • *Provide consultation, worksite monitoring (sampling), advisory assistance and information concerning use of hazardous chemicals;* • *Investigate and document significant chemical injuries, accidents and exposures;*

	• *Serve as primary contact with outside agencies for inspection, investigations of incidents and injuries;* • *Develop, procure and maintain SDS resources for WSU access;* • *Assist departments to obtain required SDSs;* • *Provide Chemical Information Lists to State and local regulatory and emergency response agencies as necessary;* • *Archive all Chemical Information Lists as a permanent record of potential employee chemical exposure;* • *Provide basic training in hazard communication for Wright State employees;* • *Maintain records of Hazard Communication training conducted by Wright State staff;* • *Make training records available to employees;* • *Develop and distribute basic Hazard Communication information to all employees;* • *Review and monitor the status of the Wright State Hazard Communication Plan to evaluate its development, implementation, and resources;*
SUPERVISORY PERSONNEL	• *Provide updated training as necessary* • *Ensure all employees receive Hazard Communication training prior to working with hazardous chemicals at their worksite* • *Ensure implementation of the Hazard Communication Program for facilities and personnel under their control;* • *Notify Environmental Health and Safety prior to conducting operations that commercially manufacture, distribute or import hazardous chemicals;* • *Inform your reporting supervisors of their Hazard Communication management responsibilities;*

- *Ensure an up-to-date inventory (Chemical Information List) is maintained identifying all hazardous chemicals used, acquired or maintained by staff, and forward a copy to Environmental Health and Safety annually;*
- *Ensure that a system is established to make Safety Data Sheets (SDSs) readily available to employees for hazardous materials in the workplace;*
- *Ensure that a system is established for accessing SDSs during emergencies;*
- *Ensure that SDSs used by the department are fully included on the Wright State Chemwatch® system;*
- *Ensure all workers using hazardous materials are properly trained. This includes instructing employees on the location for accessing hard copies of SDSs, and/or instructing employees on the procedure to locate and print out SDSs using the Chemwatch® system;*
- *Ensure a system is established for maintaining training records;*
- *Report Hazard Communication implementation problems to EHS for action and resolution.*
- *Ensure employees have access to the written Hazard Communication Program;*
- *Ensure employees receive training in the safe use, handling and storage of hazardous chemicals;*
- *Ensure hazardous materials are evaluated to determine necessary precautions;*
- *Ensure that containers of hazardous materials are labeled properly and labels are not removed or defaced;;*
- *Ensure that SDSs are readily available to employees;*
- *Ensure that all employees who use hazardous*

	materials are familiar with the contents of SDSs, know where hard copies of SDSs are available in their department and/or are familiar with the Chemwatch® system and are able to access electronic copies of the SDS for the hazardous materials they use; • *Ensure that employees minimize any potential exposure through the use of available engineering or facility design features (e.g., specialized ventilation devices such as hoods, physical barriers, etc.), safe work practices, and necessary or assigned personal protective equipmen;* • *Follow requirements established by the Hazard Communication Standard;* • *Assess the hazards and protective measures associated with nonroutine tasks involving hazardous materials;* • *Coordinating employee medical consultation and/or surveillance with EHS if overexposure to a hazardous chemical is suspected;* • • *Ensure completion of Incident Reports of Injury for employee illnesses or injuries caused by exposure to hazardous materials;* • *Reporting to EHS problems pertaining to the implementation of the Plan.*
EMPLOYEES	• *Perform work in a safe manner;* • *Comply with all applicable provisions of the Wright State Hazard Communication Plan;* • *Follow all standard operating procedures for their worksite;* • *Ensure containers are labeled, tagged or marked with the identity of the material and appropriate hazard warning* • *Ensure adequate labeling of shipped containers if*

	you are a manufacturer, importer or distributor • *Obtain and maintain Safety Data Sheet information* • *Read chemical labels and Safety Data Sheets when necessary, and follow their instructions and warnings* • *Attend information and training programs* • *Attend Hazard Communication training and comply with training documentation procedures;* • *Know where to obtain information on the name of the Department Hazard Communication Coordinator, the location of hard copies of SDSs and/or how to obtain a SDS from the electronic Chemwatch® system.* • *Be familiar with and implement protective measures as instructed by supervisors and as specified in SDSs;* • *Report all workplace injuries, chemical exposure incidents or unsafe work conditions to supervisors as soon as possible* • *Use personal protective equipment and clothing in accordance with prescribed training;* • *Report the existence of health and safety hazards associated with the use of chemicals to his/her supervisor or EHS.*
PROJECT MANAGERS	• *Ensure SDSs are available for hazardous chemicals used by contractors in locations where WSU employees may be exposed;* • *Determine the nature of hazardous chemicals present in areas where contractors will work, and ensure contractors are informed of chemical hazards they may be exposed to while working in WSU facilities; and* • *Coordinate exchange of hazardous chemical information between contractors and WSU employees when chemical exposures are reported.*

CONTRACTORS	• *Inform and provide WSU departments with a chemical inventory and safety data sheets for the materials that will be at the work area in the course of their work;* • *Provide information regarding where chemicals will be used and stored;* • *Develop and implement their own Hazard Communication Program; and* • *Upon request by WSU personnel (e.g., Project Managers) identify hazardous chemicals used on campus and provide access to SDSs.*

IDENTIFICATION OF POTENTIALLY EXPOSED EMPLOYEES

Department managers, lead administrators, and area supervisors are responsible for identifying employees who may be exposed to hazardous chemicals either under normal working conditions or in reasonably anticipated emergencies. Identification of these employees may be based on various criteria including job descriptions, recommendations of supervisors, or information from job hazard analyses. For the purposes of this Program, potentially exposed employees often include:

- *Facilities staff including custodial, grounds maintenance, physical plant trade workers and activities.*
- *Stockroom, shipping, and receiving personnel who handle hazardous chemicals.*
- *Emergency response personnel including police and other safety personnel.*
- *Personnel who regularly work in proximity to hazardous chemical during regular work functions.*
- *Other departments where chemical handling may occur, such as food services, printing services, art and library conservation, and theater arts department.*
- *Clinical and other non-research laboratories.*

Employees who encounter hazardous chemicals in non-routine, isolated instances, such as office workers, mail clerks, or faculty, are not covered by this Program.

STEPS IN THE HAZARD COMMUNICATION PROCESS

1. Chemical manufacturers and importers classify and categorize the chemicals they produce according to specific criteria that describe the chemical's health, physical, and other specified hazards.
2. Manufacturers and importers use this classification and category to determine the standardized information they must provide on labels and in safety data sheets.
3. Wright State purchases hazardous chemical products from the manufacturer, distributor, or importer. Each shipped container of hazardous chemical must have a label and include a safety data sheet that classifies the chemical and provides specific information about its hazards.
4. Wright State develops, implements, and maintains a written hazard communication plan that:

    a) *Lists all the hazardous chemicals that employees may be exposed to at their workplace, using product identifiers that are cross-referenced to the label and the safety data sheet. Chemical inventories must be available to employees in the work area.*

    b) *Describes how that particular workplace will use the plan, the safety data sheets, the labels, and training to keep employees safe.*

    c) *Wright State assigns responsibilities for all the elements of the hazard communication plan.*

Wright State ensures that the program is maintained and updated as needed.

HAZARD DETERMINATION

All hazardous chemicals used or stored at the Wright State University are purchased materials. There are no manufactured or intermediate hazardous chemicals in WSU facilities subject to this Hazard Communication Program except in research laboratories. Chemical manufacturers or distributors are responsible for determining material hazards.

Additional requirements not addressed by this Hazard Communication Program apply to manufacturers, distributors and importers of hazardous materials.

The Department of Environmental Health and Safety must be notified in advance if any employee on campus plans to:

- ***Manufacture*** *chemical materials for non-research use or distribution;*
- ***Distribute*** *hazardous chemicals to non-Wright State entities; or*

- ***Import*** *hazardous materials from other countries for the purpose of supplying them to distributors or non-Wright State entities.*

HAZARD CLASSIFICATION

The GHS has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures of the substance are covered. A chemical mixture may be considered as a whole or by its ingredients to determine its hazards.

A chemical may be considered as a whole if it has been tested as a whole and an SDS has been issued accordingly. Otherwise the mixture must be evaluated by its components. If the mixture contains 1.0 percent or more of a hazardous chemical, or 0.1 percent of an ingredient listed as a carcinogen or suspected carcinogen, the whole mixture is assumed to have the same health and/or carcinogenic hazards as its components.

Each physical or health hazard is a **hazard class.** For example, carcinogenicity is a hazard class. Hazard class may be sub-divided in the criteria into several **hazard categories** based on the degree of the hazard. Placing a chemical into a hazard class, and where necessary, a hazard category, is the *concept of hazard classification -- determining not only the hazard, but also the severity of the effect.*

Numbers (1-4) are used to classify hazards to determine what label information is required. The lower the number (e.g., 1), the most severe the hazard. The higher the number (e.g., 4) the least severe the hazard.

Health Hazard Classification

Appendix A to 1910.1200 provides information about the classification of health hazards.

Chemicals are health hazards when they are classified as posing one of these hazardous effects:

- *Acute toxicity (any route of exposure)*
- *Aspiration toxicity*
- *Carcinogenicity*
- *Germ cell mutagenicity*
- *Reproductive toxicity*
- *Respiratory or skin sensitization*

- *Serious eye damage or eye irritation*
- *Skin corrosion and irritation*
- *Specific target organ toxicity (single or repeated exposure)*

Health effects can range from acute effects (symptoms of short duration or that appear immediately after an exposure) to chronic effects (persistent symptoms or those that appear after longer-term exposures.)

Table 1. GHS Health Hazard Pictograms

Table 2. GHS Health Hazard Classification

Hazard Class	Hazard Category			
Acute Toxicity	1	2	3	4
Skin Corrosion/ Irritation	1A	1B	1C	2
Serious Eye Damage/ Eye Irritation	1	2A	2B	
Respiratory or Skin Sensitization	1			
Germ Cell Mutagenicity	1A	1B	2	
Carcinogenicity	1A	1B	2	
Reproductive Toxicity	1A	1B	2	Lactation
STOT – Single Exposure	1	2	3	
STOT – Repeated Exposure	1	2		
Aspiration	1			
Simple Asphyxiants	Single Category			

Physical Hazard Classification

Appendix B to 1910.1200 provides information about the classification of physical hazards.

Chemicals are physical hazards when they are classified as posing one of these hazardous effects:

- *Corrosive to metals*
- *Explosive*
- *Flammable (includes aerosols, gases, liquids, and solids)*
- *Pressurized gases*
- *Organic peroxides*
- *Oxidizers (includes gases, liquids, and solids)*
- *Pyrophoric (includes liquids and solids)*
- *Self-heating substances*
- *Self-reactive substances*
- *Substances that emit flammable gases in contact with water*

Simple asphyxiants

A simple asphyxiant is a substance or mixture that displaces oxygen in the ambient atmosphere and can cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

Combustible dust

Combustible dust is a particulate solid that becomes a fire or explosion hazard when suspended in air or in another oxidizing medium over a range of concentrations, regardless of the particle size or shape.

Pyrophoric gas

A pyrophoric gas is a chemical in a gaseous state that will ignite spontaneously in air at or below a temperature of 130 degrees F.

Hazards not otherwise classified (HNOC)

HNOC describes adverse physical or health effects based on scientific evidence that does not currently meet federal OSHA's specified criteria for a physical or health hazard class. These hazards do not have to be disclosed on a label, but must be disclosed in Section 2, Hazard identification, of its safety data sheet.

Table 3. GHS Physical Hazard Pictograms

Table 4. GHS Physical Hazard Classification

Hazard Class	**Hazard Category**						
Explosives	Unstable Explosives	Div 1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5	Div 1.6
Flammable Gases	1	2					
Flammable Aerosols	1	2					
Oxidizing Gases	1						
Gases under Pressure 1. Compressed Gases 2. Refrigerated Liquefied Gases 3. Dissolved Gases	1						
Flammable Liquids	1	2	3	4			
Flammable Solids	1	2					
Self-Reactive Chemicals	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Pyrophoric Liquids	1						
Pyrophoric Solid	1						
Pyrophoric Gases	Single category						
Self-heating Chemicals	1	2					
Chemicals, which in	1	2	3				

contact with water, emit flammable gases							
Oxidizing Liquids	1	2	3				
Oxidizing Solids	1	2	3				
Organic Peroxides	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Corrosive to Metals	1						
Combustible Dusts	Single category						

IDENTIFYING HAZARDOUS CHEMICALS -- INVENTORY

The Wright State Hazard Communication Plan applies to all persons who are potentially exposed to hazardous chemicals in their work (except laboratories). All supervisors must determine which chemicals may present a hazard to their employees based on the following:

- *the physical and chemical properties of the substance;*
- *its potential health effects; and*
- *how the substance is used.*

Every supervisor shall create and maintain a hazardous chemical inventory for their areas of responsibilities.

The broadest possible perspective should be used when compiling the inventory. "Chemicals" are not only liquids in containers. The HCS covers chemicals in all physical forms -- liquids, solids, gases, vapors, fumes, and mists -- whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors that determine whether a chemical is covered. If it's not hazardous, it's not covered. If there is no potential for exposure, (e.g., the chemical is inextricably bound and cannot be released), the rule does not cover the chemical.

Chemicals must be identified in containers, including pipes, and chemicals generated in the work operations. For example, welding fumes, dusts, and exhaust fumes are all sources of chemical exposures. Employees must read labels provided by the suppliers on hazard information. A list of all chemicals in the workplace that are potentially hazardous must be compiled and readily available to employees.

In identifying hazardous chemicals in the work area, attention should be given to:

a) The quantity of the chemical used;
b) The physical properties of the chemical (e.g., volatility, flammability, etc.);
c) The potency and toxicity of the chemical;

d) The manner in which the chemical will be used; and
e) The means available to control release of, or exposure to the chemical.

It is important that written standard operating procedures for each work area are periodically reviewed to ensure that appropriate safety precautions are included. These procedures should be periodically updated to reflect changes that may affect the chemical hazard assessment of ongoing work. Furthermore, the inventory should be updated upon introduction of a new chemical into the workplace.

The chemical inventory serves as an index for SDSs that must be readily available at the worksite. Each worksite shall include a list by name of all hazardous chemicals used in the workplace by using the identity that is referenced on the SDS. This identity is often a common name, such as the product or trade name (i.e., Lime-A-Way).

The inventory list should identify each hazardous chemical by the primary name on the label, the manufacturer or distributor of the chemical, the name listed on the SDS, the location of the chemical and the quantity. The product identifier for each chemical in the inventory must match and must be easily cross-referenced with the product identifier on its label and on its Safety Data Sheet (SDS).

> *Inventory lists shall be available in work area and readily available to employees.*

Safety data sheets should be consulted for important physical and health hazard data. The American Conference of Industrial Hygienists' Threshold Limit Values (TLVs) and OSHA Permissible Exposure Limits (PELs) can also be referenced for health exposure information. The hazards of mixing chemicals must also be addressed. Supervisors may contact EHS for assistance in performing a hazardous chemical assessment or to obtain copies of the OSHA Hazard Communication Standard or additional copies of this document.

Trade Secrets

Chemical manufacturers, importers, and employers may withhold specific chemical information, including the chemical name, other specific identification of a hazardous chemical, or the exact percentage of the substance in a mixture from the safety data sheet, provided that:

- *The claim that the information is a trade secret can be supported.*
- *Information contained in the safety data sheet about the properties and effects of the hazardous chemical is disclosed.*

- *The safety data sheet indicates that the chemical's identity or percentage of composition is being withheld as a trade secret.*
- *The chemical's identity and percentage is made available to health professionals, employees, and designated representatives in accordance with the requirements of 1910.1200(i).*

Appendix E to 1910.1200 – Definition of Trade Secret sets out the criteria to be used in evaluating trade secret claims.

SAFETY DATA SHEETS

General Information -- Update to the MSDS Requirement

Safety Data Sheets (SDSs), formerly called Material Safety Data Sheet (MSDSs) provide basic safety information about a specific chemical substance or product. In March 2012, OSHA revised the requirements for providing safety information on chemicals. As part of this revision, the format and required content of these informational sheets were standardized. The 2012 revision of the Hazard Communication Standard updated the term MSDSs to Safety Data Sheets (SDSs). Manufacturers were required to provide these standardized SDSs by June 2015.

Safety Data Sheets (SDSs) identify the physical and chemical properties of hazardous chemicals (e.g., flash point, vapor pressure), their physical and health hazards (e.g., potential for fire, explosion, signs and symptoms of exposure), and precautions for safe handling and use. Information in the SDS covering the physical and chemical properties of a chemical (e.g., volatility, flammability, reactivity), its toxic properties (e.g., carcinogen or reproductive hazard), and routes of exposure can be used to define what potential hazards the material presents to users.

A SDS shall be available for every hazardous chemical used in a work area and shall be accessible to employees. All manufacturers, distributors, and/or suppliers of hazardous chemicals are required to provide an SDS with each chemical purchased. If shipments of chemicals are received without an SDS, the recipient should contact the manufacturer/supplier for a copy.

It is important to ensure that SDSs (or information contained therein) maintained at the worksite provide up-to-date, complete, and accurate information. Supervisors and employees may wish to consult with EHS or the National Library of Medicine (NLM) for access to additional chemical information databases (see Appendix XX).

It is important for the supervisor to ensure that any and all incoming SDSs are reviewed for new and significant health and safety information. Hazard information must be shared with the affected employees. This may be done through delegation.

Material Safety Data Sheets (MSDS) published before June 2015

There were no requirements for the format for MSDSs under the OSHA HSC prior to the 2012 revisions, and therefore the format of an MSDS may vary. However, all MSDSs were required to include the certain specific safety information:

- *Manufacturer/Distributor address and phone number*
- *Identity used on label*
- *Hazardous ingredients (>1% concentration for most chemicals, >0.1% concentration for carcinogens)*
- *Physical and health hazards*
- *Identify whether it is a carcinogen*
- *Physical and chemical characteristics*
- *Routes of entry*
- *Exposure limits, if any*
- *Safe handling/ control measures*
- *Emergency and First Aid procedures*
- *Date the MSDS was prepared or revised.*

Safety Data Sheets (SDS) – published after June 2015

The revised Hazard Communication Standard requires that the information on the SDS be presented using specific headings in a specified sequence. The phrases used in SDSs are all standardized to ensure clarity and consistency between manufacturers. As of June 2015, all newly purchased chemicals must be accompanied by an updated SDS. These SDSs must contain the following 16 sections, in this order:

- *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*

For the purposes of this written program, MSDSs will now be referred to as SDSs.

The SDS does not need to include identification of chemical constituents if the material is classified a "trade secret." All other elements of the SDS must be completed to reflect the hazards and necessary precautions. Identification of the constituents must be disclosed to health care providers when requested, and when an employee's health is at issue. SDSs must be available to employees in the work area before the hazardous materials are used. Designated employee representatives (e.g., union representative) must also be provided SDSs upon request. Supervisors are responsible for ensuring that SDSs are available prior to assigning tasks to employees that involve exposure to hazardous materials. If a SDS for a hazardous material is not available, employees shall not be assigned tasks involving that material. If an employee or designated representative requests a copy of a SDS, it must be provided within five days.

SDSs are not required to be available in a language other than English. If an employee is unable to understand or interpret the information contained in the SDS, it is the Supervisor's responsibility to ensure appropriate direction or translation is provided to assure a clear understanding of hazards and protective measures. Employees must be notified of methods to obtain an SDS during an emergency.

SDSs for laboratory and non-laboratory chemicals are available electronically through the Chemwatch® system available at the Wright State Environmental Health and Safety web site: http://www.wright.edu/facilities-management-and-services/environmental-health-and-safety.

In addition to SDSs provided by Wright State employees may obtain a copy of a SDS from EHS by phone (937-775-2215), email (ehs@wright.edu) or by written request. During "off-hour" emergencies, SDSs can be obtained by requesting the University Police dispatcher (937—775-2111) to contact the on-call Environmental Health and Safety staff who will coordinate information retrieval. If SDSs are not received with a new chemical/material, the manufacturer or distributor must be contacted to obtain the SDS. EHS will provide assistance if needed and requested.

Purchasing and Receiving Procedures

Vendors provide Safety Data Sheets with hazardous chemicals and products supplied to Wright State University, including samples. New copies must be sent to the specific ordering department at Wright State University whenever revisions are made to the Safety Data Sheet. Individual departments are responsible for securing an SDS if it is not sent by the manufacturer.

Accessibility

SDSs are accessible to employees during their work shift in their department upon request to department supervisors and/or Environmental Health and Safety. They are also readily available on the web. SDSs can be easily accessed using the Chemwatch Chemical Management system, which is located on the EHS website at http://www.wright.edu/facilities-management-and-services/environmental-health-and-safety.

Wright State University will make copies of SDSs available to all employees and to anyone who may request it, not only those who are covered by this program.

SDSs are available to outside contractors upon request.

Replacement of Safety Data Sheets

Manufacturers and importers are required to replace out of date or incorrect data sheets. It is the responsibility of each department to periodically review and update its files. Responsibility for the accuracy of an SDS rests solely with the originator of the Safety Data Sheet. By June 2015, manufacturers and distributors were required to provide all customers of their chemicals with and SDS that meets the requirement of this standard.

Creation of a Safety Data Sheet

In the event that Wright State University needs to create an SDS, Wright State EHS should be consulted for assistance. This would only be required if a University worker or student is producing a new chemical and sending it to someone else to work with or use.

CONTAINER LABELING

General Requirements – Labels prior to June 2015

All containers of hazardous chemicals must be properly labeled in accordance to the requirements of this standard. The label and information must be in English. For containers purchased before June 2015, the manufacturer's labeling requirements must include the following, at a minimum:

- *Identity of hazardous material;*
- *Appropriate hazard warning, including both physical and health hazards; and*
- *Name and address of chemical manufacturer, importer, or other responsible party.*

General Requirements – Labels after June 2015

OSHA adopted a new hazardous chemical labeling requirement as a part of its 2012 revision of the Hazard Communication Standard. These changes were enacted to help ensure improved quality and consistency in the classification and labeling of all chemicals, and to enhance worker comprehension. 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.

Labels provide information to the workers on the specific hazardous chemical. They are limited by design in the amount of information that they can provide. SDSs, which must accompany hazardous chemicals, are the more complete resource for details regarding hazardous chemicals.

Labels are an appropriate group of

- *written,*
- *printed, or*

- *graphic informational elements.*

On **immediate containers,** labels may be

- *affixed,*
- *printed on, or*
- *attached.*

On **outside packaging,** labels may be
affixed

- *affixed,*
- *printed on, or*
- *attached.*

Under the revised standard, all chemical containers purchased after June 2015 must be labeled with the following information:

product identifier;
signal word (Danger or Caution);
hazard classification/pictogram;
standardized hazard statement(s);
standardized precautionary statement(s);
supplier information, including name, address and telephone number of the chemical manufacturer, importer, or other responsible party; and
supplemental information may be added as needed.

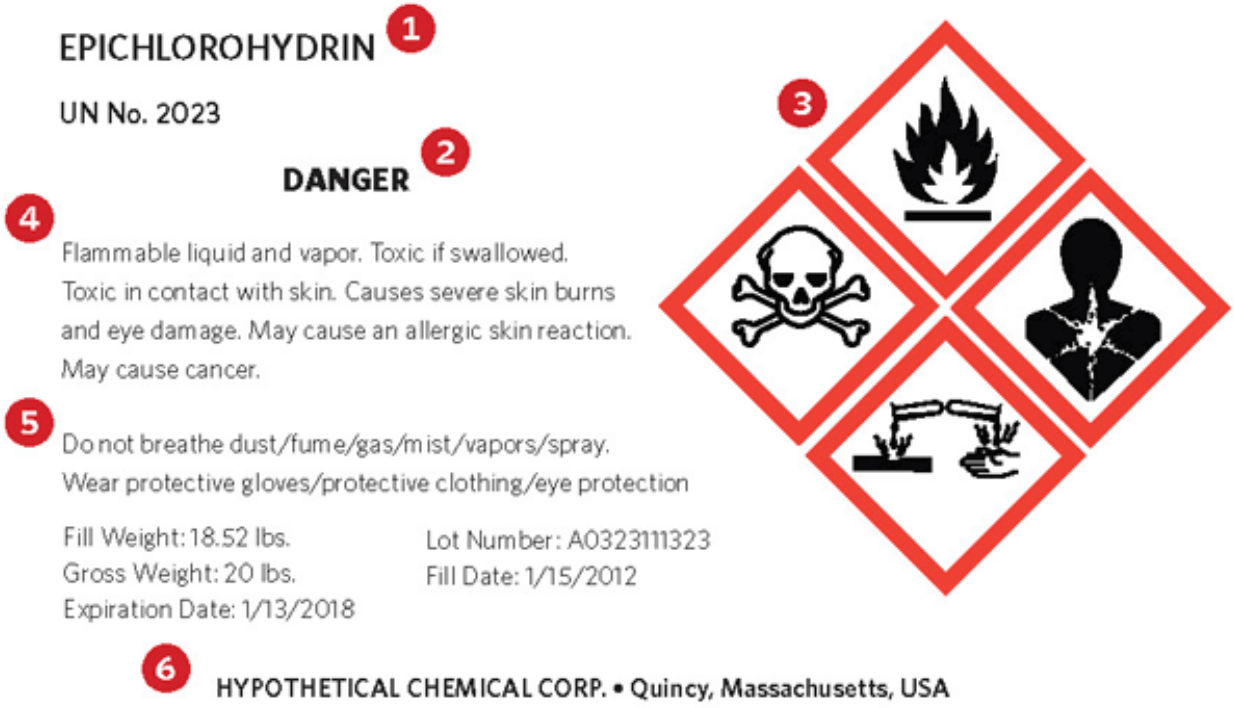


Figure 1. Example GHS Label

Label Specifications

Manufacturers, importers, and distributors must first identify and classify the chemical hazard(s) by using the Hazard Communication Standard (HCS2012) mandatory Appendices A, B, and C. Once this information has been identified and gathered, a label may be created.

- *Appendix A is used for health hazard classification,*
- *Appendix B is used for physical hazard classification.*
- *Appendix C is used to determine the appropriate pictogram(s).*

Label Elements

- ***Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party.*
- ***Product Identifiers** show 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*** *indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. Only one signal word will be used on a label.*

Signal Words

Signal words tells you the severity of the hazard. A key part of GHS is that labels and SDS will consistently use the same signal words: Danger and Warning.

Based on the severity and imminent impact to a potential hazard, the American National Standards Institute (ANSI) established three signal words to the associated with hazards to be printed on hazardous chemical labels: Danger, Warning, and Caution.

The only two signal words are used in the 2012 Revision of the Hazard Communication Standard are:

- ***Danger*** *means a more severe hazard within a hazard class. These include:*
    - ***Extremely flammable liquid***
    - ***Flammable gas***
    - ***Pyrphoric solid***
    - ***Oxidizer***
    - ***Corrosive***
    - ***Highly toxic (poison) by inhalation, absorption, or ingestion***
    - ***Sensitizer to lungs***
- ***Warning*** *means the less hazard is less severe within a hazard class. These include:*
    - ***Flammable liquid or solid***
    - ***Irritant (severe respiratory, skin, or eye)***
    - ***Toxic by inhalation, absorption, or ingestion***
    - ***Sensitizer (skin)***
    - ***Combustible liquid***
    - ***Irritant (moderate respiratory, skin or eye)***
    - ***Irritant, defatting skin***

- ***Potential suffocation***
- ***Harmful by absorption or ingestion***

Hazard Statements

Hazard Statements describe the nature of the hazard(s) of a chemical, including the degree of hazard.

Hazard statements are assigned a unique alphanumerical code which consists o one letter and three numbers, as follows:

a) The letter "H" (for hazard statement);
b) A number designating the type of hazard to which the hazard statement is according to the numbering of different parts of the GHS, as follows:

- "2" for physical hazards;
- "3" for health hazards;
- "4" for environmental hazards

c) two numbers corresponding to the sequential number of hazards arising to the intrinsic properties of the substance or mixture, such as explosivity (codes 200 to 210), flammability (codes from 220 to 230), etc.

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.

Precautionary Statements

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.

Five Type of Precautionary Statements:

a) **General**
b) **Prevention: t**o minimize exposure

Response: in case of accidental spillage or exposure emergency response, and first-aid
Storage
Disposal

The precautionary statements are assigned a unique alphanumerical code which consists of one letter and three numbers as follows:

a) a letter "p" (for precautionary statement")
b) one number designating the type of precautionary statement as follows:

- "1" for general precautionary statements;
- "2" for prevention precautionary statements;
- "3" for response precautionary statement;
- "4" for storage precautionary statements;
- "5" for disposal precautionary statements:

c) the numbers corresponding to the sequential numbering of precautionary statements.

Supplementary Information

The label producer may provide additional instructions or information that it deems helpful as supplementary information.

Required information

- *The percentage of ingredient(s) of unknown acute toxicity when it is present in a concentration of greater or equal to 1% (and the classification is not based on testing the mixture as a whole).*

Optional information

- *Personal protective equipment indicating what workers should wear while handling the chemical*
- *Directions of use*
- *Hazards that are not otherwise classified may also be listed.*

Pictograms

Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical.

Format requirements

Pictograms must be a red square frame set at a point with a black hazard symbol on a white background. Hazardous materials may be represented by nine pictograms as defined by OSHA:

a) Health Hazard
Flame
Exclamation Mark
Gas Cylinder
Corrosives
Exploding Bomb
Flame over Circle
Environment (Non-Mandatory, OSHA does not enforce)
Skull and Crossbones

PICTOGRAMS AND HAZARD CLASSIFICATIONS

HCS2012 Pictograms and Hazards

HEALTH HAZARD  • *Carcinogen* • *Mutagenicity* • *Reproductive Toxicity* • *Respiratory Sensitizer* • *Target Organ Toxicity* • *Aspiration Toxicity*	FLAME  • *Flammables* • *Pyrophorics* • *Self-Heating* • *Emits Flammable Gas* • *Self-Reactives* • *Organic Peroxides*	EXCLAMATION MARK  • *Irritant (skin and eye)* • *Skin Sensitizer* • *Acute Toxicity* • *Narcotic Effects* • *Respiratory Tract Irritant* • *Hazardous to Ozone Layer (Non-Mandatory)*
GAS CYLINDER  • *Gases Under Pressure*	CORROSION  • *Skin Corrosion/Burns* • *Eye Damage* • *Corrosive to Metals*	EXPLODING BOMB  • *Explosives* • *Self-Reactives* • *Organic Peroxides*
FLAME OVER CIRCLE	ENVIRONMENT (Non-Mandatory)	SKULL AND CROSSBONES

 • *Oxidizers*	 • *Aquatic Toxicity*	 • *Acute Toxicity (fatal or toxic)*

OSHA Pictograms and DOT Labels and Placards

OSHA pictograms do not replace the diamond-shaped Department of Transportation (DOT) labels and placards to transport chemicals. DOT labels must be on the external part of a shipped container and must meet DOT requirements per 49 CFR 172, Subpart E. Currently, OSHA will allow both DOT and HCS pictograms for the same hazard on a label.

> *To be clear, on the outside of shipping containers, the DOT label is required; on the smaller container inside the larger shipped container, the OSHA GHS pictogram is required.*

Container Labeling

Important Information

Workplace labels or other forms of warning must be

- *legible,*
- *in English, and*
- *other languages may be used on the label, as long as the information is presented in English as well.*

Labels must be revised with any new, significant information regarding the hazards of a chemical within six months of becoming aware of the new information.

Examples of workplace labels may be found on incoming container, secondary or transfer containers, and stationary process containers.

Stationary Process Containers

Stationary process containers may be labeled with

- *signs,*

- *placards,*
- *process sheets,*
- *batch tickets, operating procedures, or*
- *other such written materials*

This labeling may be used 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 the Hazard Communication Standard to be on a label. The SDSs for the material in stationary process containers must be readily accessible to the employees in their work area throughout each work shift.

Incoming Containers

Labels on incoming containers must not be destroyed, removed or defaced unless immediately replaced with another label containing the required information.

Transfer or Secondary Containers

A transfer or secondary container is one that is used to transfer hazardous chemicals from a primary container for more convenient use.

Transfer or secondary containers must be labeled if not used immediately. If used within one work shift, a label is not required. It is important that no confusion occur, either because there is more than one unlabeled container being used at the same time, or because personnel other than the one initially transferring the chemical use the chemical.

> *Once the container is left unattended, it must be properly labeled with the identity and complete hazard warning.*

Secondary containers of hazardous materials must be labeled according to requirements listed above. It must be labeled with either a copy of the original label or with an appropriate hazard label. Also, if a chemical has been modified or if the container is being reused for another substance (the container must be compatible with the new substance and properly cleaned), then the original label must be removed or fully defaced, and a new label must be attached.

An appropriate secondary container label must have

- *the chemical name*

- *the appropriate hazard warning(s)/precaution(s).*

Wright State has adopted the GHS (Globally Harmonized System), a universal labeling system employing pictograms. The following is an example of the label to be used on campus and labels are available for creating and printing via Chemwatch. Contact EHS at (937)775-2215 or email at mailto:ehs@wright.edu?subject=Chemical Label Assistance

For assistance.

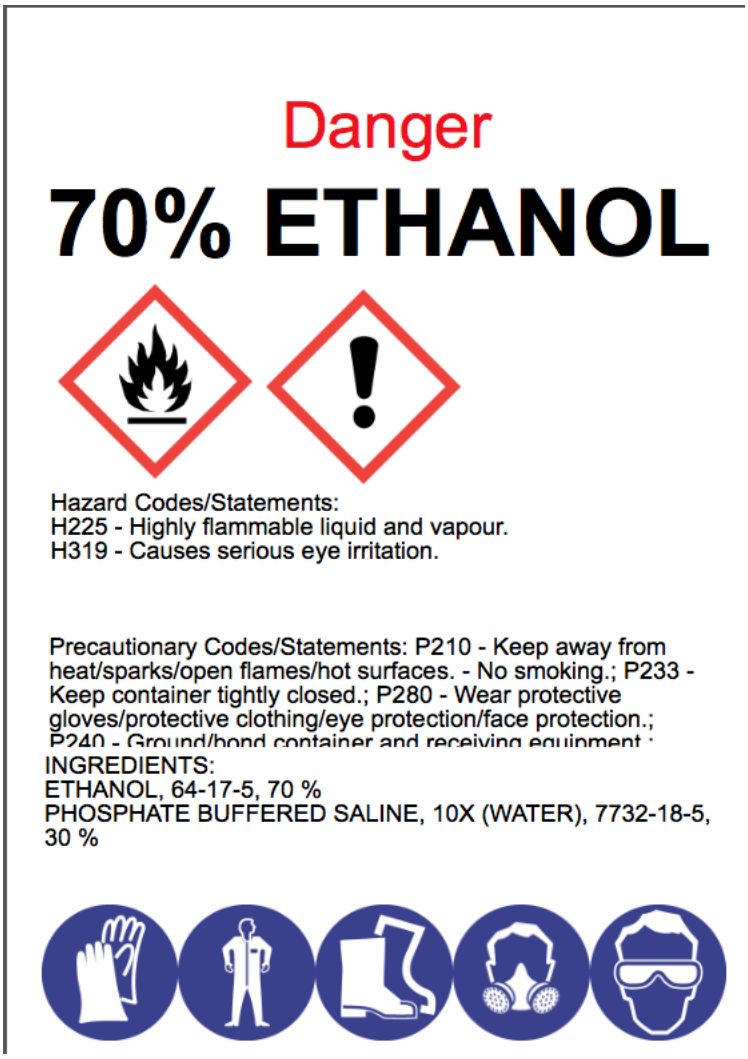


Figure 2. Transfer or secondary container label produced with Chemwatch

Labeling pipes containing hazardous substances

Examples of pipes that contain hazardous substances are pipes that contain physical hazards, such as combustible liquids or compressed gas and pipes that contain health hazards, such as toxic, carcinogenic, or corrosive chemicals.

The labeling must clearly identify the location of the pipes and the substances in the pipes. This information must be conveyed by the labels or made readily available to employees in their work areas.

- *Warning labels must be applied at the beginning and the end of continuous pipe runs.*
- *If a pipe is above or below the normal line of vision, the label must be applied above or below the horizontal center line of the pipe so that employees can see it.*

Pipes insulated with asbestos-containing material

Wright State uses warning labels on the pipes and other methods, such as process sheets or written operating procedures, to identify asbestos-containing pipes. Wright State's warning method specifies the location of the pipes and use these words:

> ***DANGER. CONTAINS ASBESTOS FIBERS.***
>
> ***MAY CAUSE CANCER.***
>
> ***CAUSES DAMAGE TO LUNGS.***
>
> ***DO NOT BREATHE DUST. AVOID CREATING DUST.***

Warning labels are applied-on continuous pipe runs.

If a pipe is above or below the normal line of vision, the label is applied below or above the horizontal center line of the pipe so that employees can see it.

Other Labeling and Placarding Systems

Wright State use signs, placards, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to some individual stationary process containers as long as the alternative method identified the container to which it is applicable and conveys the required information.

In addition, several labeling systems are used throughout the campus. Employees must understand these other systems as well as the new HCS/GHS labeling requirements.

The following labeling and placarding systems are found throughout the university

- *ANSI -- American National Standards Institute*
- *NFPA -- National Fire Protection Agency*
- *HMIS – Hazard Materials Identification System*
- *DOT Labels -- Department of Transportation Labels*
- *DOT Placards -- Department of Transportation Placards*

Labeling and placarding systems: ANSI

The most common is the American National Standards Institute (ANSI) system. ANSI labels show the chemical name, a signal word (Danger, Warning or Caution), the hazards posed by the substance, a precautionary statement, and first aid procedures.

Example of an ANSI label.

Figure 3. ANSI Corrosive Chemical Label Example

Labeling and placarding systems: NFPA

National Fire Protection Association (NFPA) labels are designed to protect emergency response personnel from the dangers of hazardous materials stored in stationary containers.

They contain sections showing the degree of hazard for:

- *health,*
- *fire,*
- *reactivity, and*
- *specific hazard, such as water-reactive substances.*

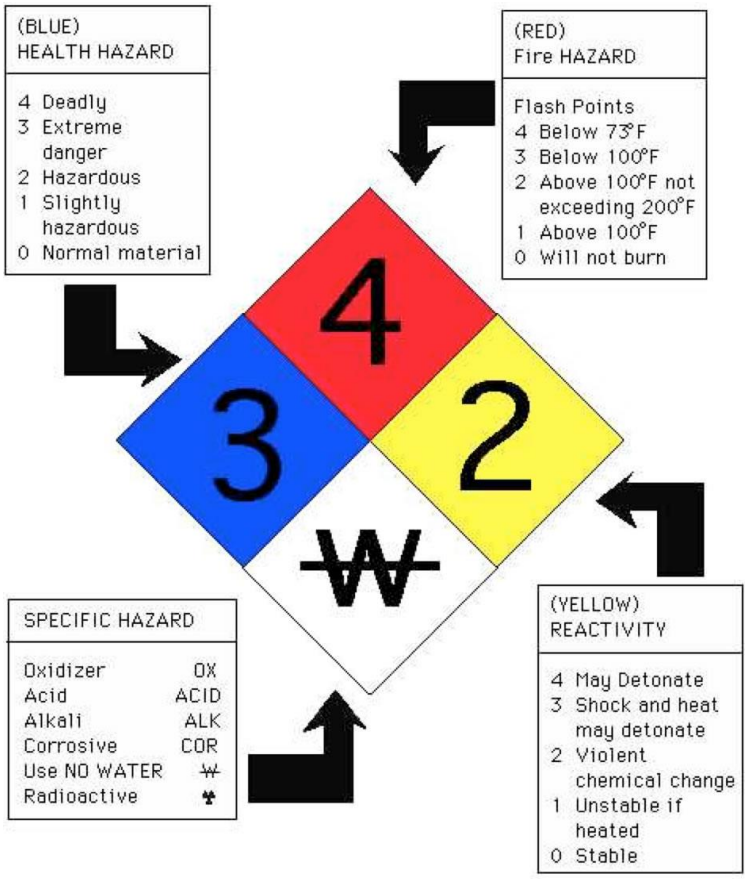


Figure 4. NFPA Label Example

Labeling and placarding systems: HMIS

The **Hazardous Materials Identification System (HMIS)** is a numerical hazard rating that incorporates the use of labels with color-coded bars as well as training materials. It was developed by the National Paint and Coatings Association (NPCA) as a compliance aid for the OSHA Hazard Communication Standard.

This has a similar color coding and numbering system to the NFPA label.

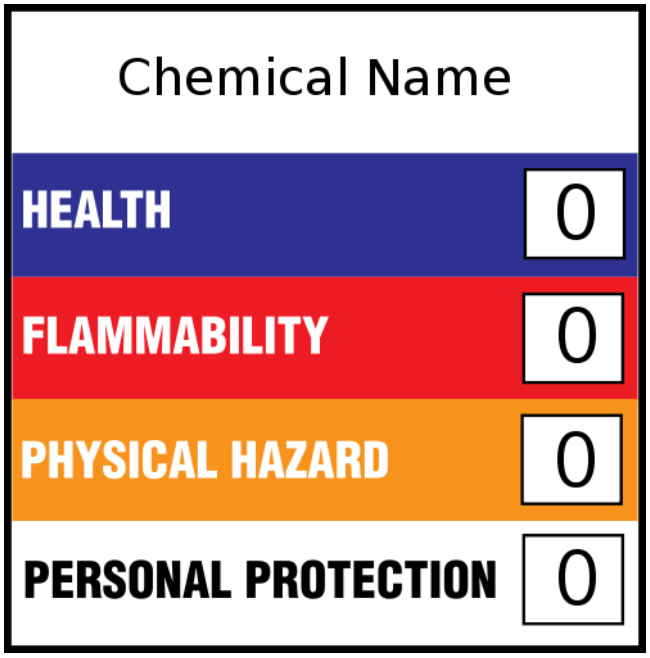


Figure 5. HMIS Label Example

Specific sections of an HMIS® label include the following:

Health
The Health section conveys the health hazards of the material. In the latest version of HMIS®, the blue Health bar has two spaces, one for an asterisk and one for a numeric hazard rating. If present, the asterisk signifies a chronic health hazard, meaning that long-term exposure to the material could cause a health problem such as emphysema or kidney damage. NFPA lacks this important information because the NFPA system is meant only for emergency or acute (short-term) exposures. According to NPCA, the numeric hazard assessment procedure

is **different** than that used by NFPA. The numeric rankings for the HMIS system are described below:

4	Life-threatening, major or permanent damage may result from single or repeated overexposures.
3	Major injury likely unless prompt action is taken and medical treatment is given.
2	Temporary or minor injury may occur.
1	Irritation or minor reversible injury possible.
0	No significant risk to health.

Flammability

For HMIS I and II, the criteria used to assign numeric values (0 = low hazard to 4 = high hazard) are identical to those used by NFPA. In other words, in **this** category, the systems are identical.

For HMIS III, the flammability criteria are defined according to OSHA standards:

4	Flammable gases, or very volatile flammable liquids with flash points below 73 °F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA) .
3	Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F and boiling points above 100 °F, as well as liquids with flash points between 73 °F and 100 °F. (Classes IB & IC).
2	Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 °F but below 200 °F. (Classes II & IIIA).
1	Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 °F. (Class IIIB).
0	Materials that will not burn.

Reactivity (HMIS® I and II - now obsolete)

The criteria used to assign numeric values (0 = low hazard to 4 = high hazard) were identical to those used by NFPA. In other words, in **this** category, the systems

were identical.

This version is now obsolete. The yellow section has been replaced with an orange section titled **Physical Hazards**- see the next section for more information.

Physical Hazard (HMIS® III)

Reactivity hazard are assessed using the OSHA criterion of physical hazard. Seven such hazard classes are recognized:

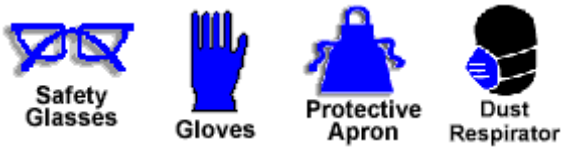
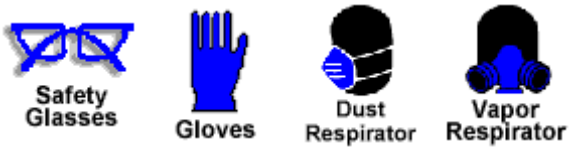
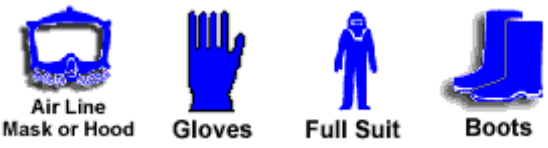
- Water Reactives
- Organic Peroxides
- Explosives
- Compressed gases
- Pyrophoric materials.
- Oxidizers
- Unstable Reactives

This version replaces the now-obsolete yellow section titled **Reactivity** - see the previous section for more information. As with the Health and Flammability sections, the level of hazard is indicated using numeric values (0 = low hazard to 4 = high hazard):

4	Materials that are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure.
3	Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion.
2	Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.
1	Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
0	Materials that are normally stable, even under fire conditions, and will **not** react with water, polymerize, decompose, condense, or self-react. Non-explosives.

Personal Protection
This is by far the largest area of difference between the NFPA and HMIS® systems. In the NFPA system, the white area is used to convey special hazards whereas HMIS® uses the white section to indicate what personal protective equipment (PPE) should be used when working with the material. **Note**: The NPCA specifically recommends that "preparers of MSDSs **should not place HMIS® PPE designation codes on the MSDSs or labels that leave the facility**, as they do not know the conditions under which their customers use those products." However, these still turn up on some MSDS's. HMIS® uses a letter coding system for this section. The letter-coding system is difficult to remember because each letter refers to a PPE ensemble. Be certain to verify the PPE required for these codes. The "custom codes" aspect is particularly dangerous for visitors and contractors who may not remember/recognize that these could vary from job site to job site. ***Note:*** *Some of the letters/symbols used in this table are also used as TSCA, CHIP, and/or DoD HMIRS/HCC codes, all of which have completely different meanings and applications!* The lettering scheme here, along with a series of graphics is meant to reinforce the meaning of each letter:

HMIS® Letter	Required Equipment
A	
B	
C	

D	
E	
F	
G	
H	
I	
J	
K	
L through Z	Site-specific label. Ask your supervisor or safety specialist for handling instructions

Labeling and placarding systems: DOT labels

All hazardous chemicals transported on the public highway must have a Department of Transportation (DOT) label which must not be removed until containers are emptied and cleaned.

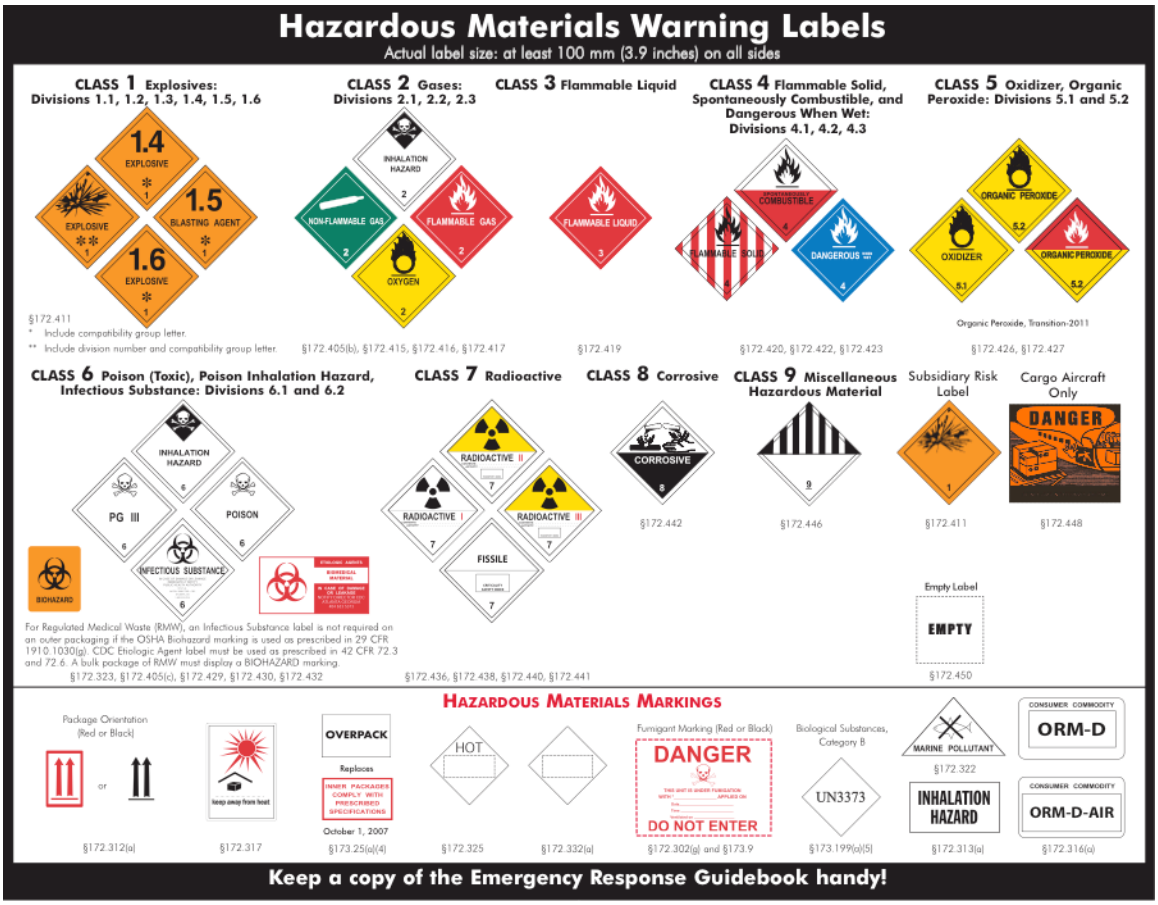


Figure 6. DOT Hazardous Materials Warning Labels

DOT's marking and labeling regulations are found in 49 CFR 172 Subparts D & E, respectively, require the following (but not limited to) marks & labels on the **outer package:**

- *Proper shipping name*
- *Identification number*
- *Technical names*
- *Name & addresses of consignee or consignor*
- *Special marking requirements*

- *Diamond hazard class label*

OSHA Labels and DOT Marks and Labels

According to HCS 2012 29 CFR 1910.1200 C.2.3.3:

> "Where a label required by DOT appears on a container, the pictogram specified in C.4 for the same hazard shall not appear."

This means that when a hazardous chemical is shipped, the outer package must bear

- *all of the required DOT marks and labels, and*
- *all of the OSHA container label information*
- *with the exception of the diamond shaped pictogram that displays the same hazards as the DOT diamond hazard labels.*

EXAMPLE: DOT AND OSHA CONTAINER

A product classified by:

- *DOT as both a Class 3 flammable liquid and Class 8 Corrosive Material*
- *OSHA with the following hazards identified:*
    a. *Category 2 Flammable liquid*
    b. *Category 3 Oral Acute Toxicity*
    c. *Category 2, Specific target organ repeated exposure (STOT-RE)*

The OSHA only pictogram that should be displayed on the outer package should be the health hazard representing STOT-RE.

Figure 7. Example of containing requiring both OSHA and DOT marks and labels

Labeling and placarding systems: DOT placards

Vehicles carrying hazardous substances into the facility may have DOT placards.

Placards are identical to DOT labels in using

- *graphics (pictograms),*
- *words,*
- *the United Nations (UN) identification system, and*
- *are color coded.*

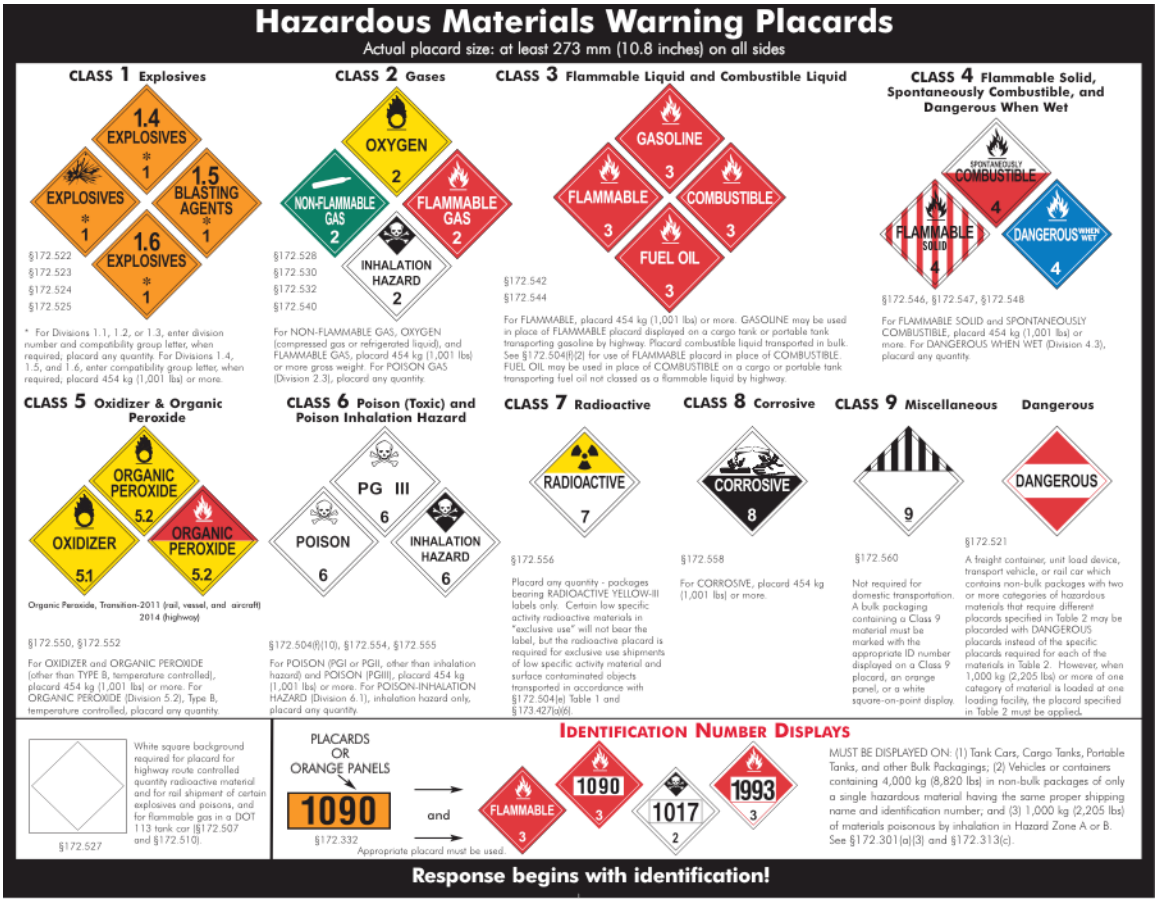


Figure 8. DOT Hazardous Materials Placards for Transportation

Shipping and receiving personnel receive special training in DOT requirements. Contact EHS at 937-775-2215 for more information.

Aboveground/Underground Storage Tanks

All Aboveground Storage Tanks (ASTs) and Underground Storage Tanks (USTs)containing hazardous chemicals will be labeled to meet OSHA"s Hazard Communication Standard requirements.

ASTs shall have the National Fire Protection Association (NFPA) fire diamond displayed in a location on the tank clearly visible to employees and emergency responders, the proper chemical name, and a 7"x10" Hazard Communication label (minimum size) for operating personnel describing the hazards and personnel protective equipment.

USTs will also be similarly labeled, except a permanent sign, displayed in a location at or near the tank, shall be used to communicate all the pertinent hazard warnings.

Tanks not affected by this plan include nonflammable gases or liquids, except cryogenic liquids, and nontoxic gases or liquids.

Labeling Exceptions

OSHA does not require labels for:

- *pesticides*
- *TSCA-regulated substances*
- *food, food additives and veterinary devices*
- *distilled spirits for non-industrial use*
- *consumer products*
- *agricultural or vegetable seed*

All of these fall under labeling requirements of other government agencies.

Labeling Review Process

The Hazard Communication Program Administrator or his/her designee shall review each label created by EHS for completeness and accuracy.

Inspection of Incoming Containers

Shipping and receiving personnel and others involved in unpacking chemicals are trained by their managers or supervisors to inspect each incoming container to insure that when it is received, each container is labeled in accordance with University's Hazard Communication Plan requirements. Environmental Health and Safety must be notified of any containers that do not conform to the above requirement.

CONTRACTORS WORKING IN WRIGHT STATE UNIVERSITY FACILITIES

General Information

Wright State University’s Department of Environmental Health and Safety, working with the Wright State Project Manager, is responsible for advising outside contractors of any chemical hazards that are known to be present in our facilities and that may be encountered by contractors working at Wright State University. This is accomplished through this document, a renovation clearance program, and

in some cases, through individual meetings between the contractor and Wright State Environmental Health and Safety, and/or the Wright State Project Manager. Individual contractors are responsible for providing their own employees with information and training concerning the health hazards, safe handling procedures, and appropriate protective measures to be used with the hazardous substances they bring on campus. It is also the responsibility of each contractor bringing chemicals on site to provide the University with the appropriate hazard information on these substances. They are required to inform the Project Manager and/or Environmental Health and Safety if they will be using hazardous chemicals in a manner which could result in a potential exposure to Wright State University employees working in adjacent areas.

Renovation Clearances

The Wright State Project Manager initiates a renovation clearance by informing Environmental Health and Safety. Wright State Environmental Health and Safety will then survey the areas identified for renovation and remove potentially hazardous chemicals or materials that are associated with activities that took place within that space. After completing the survey and removal of potentially hazardous materials, Environmental Health and Safety will clear the area for work, and inform the Wright State Project Manager. No renovation work should begin until the appropriate clearances have been received. Contractors are informed to stop work and contact EHS if they find any potentially hazardous materials (such as mercury in vacuum or plumbing utilities) during the course of their work. This work may be completed by a contractor hired by Wright State.

Contractor Conduct within Research Facilities

Contractors working in buildings housing laboratory research facilities may be working in close proximity to active research laboratories. Whenever possible, the contractor's employees should stay in the hallways and stairwells while moving to and from their work site to avoid potential exposures to hazards associated with working research laboratories. If it is necessary to enter a laboratory, the contractor's employees should step inside the door and before proceeding further, contact a laboratory worker who can identify any potential hazard that the employee should be aware of and direct them accordingly. The contractor's employees should refrain from touching anything in the laboratory during their stay. Contractors must wear all required PPE when entering a laboratory, including safety glasses.

Contractor's Obligations

Contractors who are planning to use hazardous chemicals (sealants, oil based paints, etc.) within Wright State University facilities must inform the Wright State Project Manager and/or EHS, and specifically identify the materials to be applied and the safeguards/exposure controls to be used to protect Wright State employees working in adjacent areas. Contractors must provide copies of SDSs for all hazardous materials to the Project Manager and EHS.

Contractors must also remove all chemical hazardous wastes generated during their operations and all "residual" waste chemical substances brought on site.

Appendix H should be filled out by the contractor and copies sent to the University's contracting official(s) (project managers, Department heads, etc.) and the Department of Environmental Health and Safety.

Chemical Emergency

Contractors must evacuate the building immediately whenever the building fire alarm sounds. Evacuees should move up wind from the building staying clear of driveways, access routes, and sidewalks. No one may re-enter the building until directed to do so by the on scene commander. The contractor should always identify the shortest route from the work location out of the building and make their employees familiar with this route prior to beginning work in that area. If the contractor discovers a fire or any other emergency condition such as a hazardous gas leak, hazardous material spill, smoke, or the odor of burning, the contractor should evacuate and notify the appropriate group(s) listed below to obtain help immediately:

Fire/Security/Ambulance

911 (any phone)

Wright State University Police

Chemical Spills

937-775-2215

Contractors should be prepared to contain and clean up spills of the materials they bring on site. Wright State University Environmental Health and Safety should be notified of larger spills or uncontrolled releases of substances brought on site by contractors.

Safety Data Sheet Availability

Wright State University maintains Safety Data Sheets for all hazardous chemicals handled by Wright State University employees during their work shift. These Safety Data Sheets will be made available to the contractor's employees or their designated representatives upon request.

MINIMIZING EMPLOYEE EXPOSURES HAZARD ASSESSMENT AND EXPOSURE MONITORING

Safety data sheets should be consulted for important physical and health hazard data. Section 8, Exposure and Personal Protection, of the SDS includes the American Conference of Industrial Hygienists' Threshold Limit Values (TLVs) and OSHA Permissible Exposure Limits (PELs).

OSHA established PELs for employee exposures to certain substances. The PELs are specified in the OSHA regulation 29 CFR 1910, Subpart Z Toxic and Hazardous which can be accessed at: http://www.osha.gov.

PELs and TLVs can also be obtained from EHS by calling 937-775-2215 or by email at ehs@wright.edu.

Supervisors are responsible for identifying situations that may require exposure assessments. The hazards of mixing chemicals must also be addressed. Supervisors may contact EHS for assistance in performing a hazardous chemical assessment or to obtain copies of the OSHA Hazard Communication Standard or additional copies of this document. EHS is also responsible personal exposure monitoring when requested.

Permissible Exposure Limits are often listed as:

- ***Eight-hour time-weighted average (TWA).*** *The average concentration to which an employee may be exposed to a particular chemical for up to eight hours per day, five days per week.*
- ***Short Term Exposure Limit (STEL).*** *The average concentration to which an employee may be exposed to a particular chemical for a limited period (e.g., fifteen minutes); and/or*
- ***Ceiling (C).*** *The maximum concentration to which an employee may be exposed to a particular chemical at any time.*

Employee exposure should be monitored in the following circumstances:

- *Initially, where there is reason to believe that an employee's exposure to a chemical substance exceeds an action level (or in the absence of an action level, the PEL) for an OSHA-regulated substance; and*
- *Periodically, where initial monitoring has disclosed employee exposure over the action level or PEL.*

The training provided by EHS will include information regarding examples of situations where employee exposure might exceed regulated or recommended exposure limits.

EHS will perform exposure assessments and/or monitoring at the request of any supervisor or employee. The employee will be provided written notification of monitoring results within 15 working days after receipt of results by the University. Supervisors may call EHS at 937-775-2215 or email at ehs@wright.edu to coordinate exposure monitoring.

Where initial monitoring discloses employee exposure over the action level or PEL, the affected employee must be provided with respiratory protection until engineering and/or other controls are available to control the exposure. If engineering and/or other controls are not feasible, respiratory protection may be used on a permanent basis.

PERSONAL PROTECTIVE EQUIPMENT

Supervisors in workplaces where hazardous chemicals are used must also comply with the provisions of the Wright State University's Personal Protective Equipment (PPE) Program. This Program requires a written hazard assessment be conducted to identify the equipment necessary to protect employees against chemical (and other) hazards. PPE specified in the hazard assessment must be utilized by employees performing the identified task(s). Employees must be trained in the care and use of PPE.

Personal protective equipment requirements or recommendations specified by the label or SDS of a hazardous material must be followed. When new hazardous chemicals are brought into the workplace, the individual designated by this program must evaluate the materials, notify employees of necessary PPE and ensure that the equipment is available. Supervisors are responsible for ensuring employees use all required protective equipment. Additional information concerning the Personal Protective Equipment Program may be obtained from Environmental Health and Safety by calling 937-775-2215, or through the EHS web site at: http://www.wright.edu/facilities-management-and-services/environmental-health-and-safety

MEDICAL CONSULTATION AND EXAMINATIONS

Employees who work with hazardous chemicals should be referred for medical consultation, examination, and/or surveillance (as appropriate to the circumstances) whenever:

- *An employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed;*
- *An event takes place in the work area that precipitates a hazardous exposure (e.g., significant spill of volatile toxic material;*
- *Exposure monitoring reveals an exposure level above the action level or Permissible Exposure Limit for an OSHA-regulated substance for which there are medical surveillance requirements; or*
- *Required by Wright State University policy.*

The University has established procedures for responding to job-related injuries. These procedures should be followed if potentially-injurious exposures to hazardous chemicals occur. In the event of life-threatening injuries or illnesses, the Wright State Police Dispatcher (911) should be immediately notified. All injury or illness occurring as a result of work activities must be reported to Environmental Health and Safety immediately after the incident occurs or after the injury is treated. All incidents of injurious chemical exposure, including disposition actions, should be reported to the Department of Environmental Health and Safety.

Employees who suspect they require medical assistance due to chemical exposure shall inform their supervisor who will help the employee obtain the necessary examination and treatment. The following information should be provided to the health care professional at the time that an employee is referred for medical consultation or examination:

- *Identity of the chemical(s) to which the employee may have been exposed;*

- *Description of the conditions under which the exposure occurred, including any quantitative exposure data, if available; and*
- *A description of the signs and symptoms of exposure that the employee experienced, if any.*

TRAINING

Introduction

All potentially exposed employees must be given information and training on the handling and safe use of hazardous chemicals in their work area. This training is given prior to their working with the hazardous chemicals, and whenever a new chemical hazard is introduced into their work area. Appendix C provides an outline of a typical hazard communication training class. All hazard communication training provided to Wright State University staff since August 2012 has included the required information on the new label elements, including pictograms, and the Safety Data Sheet format.

Training Materials

Wright State Environmental Health and Safety has training programs available in a variety of formats to fit the audience receiving the training. Hazard Communication training is given in classroom settings, is available on-line, and is given in conjunction with many annual departmental safety training programs.

The following information must be covered:

- *The requirements of the Hazard Communication Standard (29CFR 1910.1200)*
- *The location and the availability of the written Hazard Communication Plan*
- *Permissible exposure limits (PELs) for OSHA-regulated substances or recommended exposure limits if no PEL is listed*
- *Methods and observations used to detect the presence or release of a hazardous chemical*
- *Hazardous chemical properties including physical and health hazards associated with chemical exposure*
- *Measures employees can take to protect themselves from chemical hazards including personal protective equipment, work practices and emergency procedures*
- *Description of labeling systems*

- *Description of GHS pictograms*
- *Hazardous chemical spill and leak procedures*
- *Explanation of the SDS; and*
- *Signs and symptoms associated with exposures to hazardous chemicals used in the workplace*
- *Physical and health hazards of chemicals in the work area, their locations, and the likely effects or symptoms of overexposure*
- *Location of the departmental hazardous chemicals inventory*
- *Location of SDS documents for all hazardous chemicals in the work area*

Training Circumstances

Exposed employees must be trained under the following circumstances:

- *All workers, covered by this standard, who are exposed to hazardous chemicals at work. This includes:*
    - *New employees before they begin their initial assignments;*
    - *Transferred employees; and*
    - *Whenever new hazards are introduced into the work area*
- *Training must be provided for both routine and non-routine tasks*
- *Workers will receive at least their normal rate of pay to attend hazard communication training, which is provided at no expense to the employee.*
- *Hazard communication/chemical safety training, including the elements required by the update of this standard, is repeated department-wide on a periodic basis.*
- *In addition to job-site specific training provided by the supervisor, EHS offers a variety of safety training, industrial hygiene and surveillance programs, and information resources to promote employee health and safety. Information regarding the training opportunities offered by the EHS can be obtained by contacting EHS at (937)775-2215 or email ehs@wright.edu.*

Supplemental or Hazard-Specific Training

Supervisors shall also provide or coordinate supplemental training to affected employees that identifies the specific hazardous chemicals in the workplace, the protective measures necessary to safely work with the materials and procedures to access SDSs. When new chemicals are brought into the workplace, additional

training may be required to ensure employees understand the hazards and necessary protective measures. It is recommended that all training be documented by the Supervisor.

Hazard Communication Training Providers

A training provider must be someone who understands the required training topics and who has the skills to conduct the training in a way that employees can understand.

Wright State training providers include:

- *Environmental Health and Safety Professional Staff*
- *Departmental Managers/ Supervisors/ Designated Trainers may provide this training to covered employees only after they have been trained to do so by Wright State Environmental Health and Safety or a qualified member of their Department.*

Attendance Records

- *A record of attendance that includes the name, Wright State ID, and department of each employee attending training on hazard communication will be taken and kept on file at Wright State Environmental Health and Safety. The records maintained will be training provided by EHS. A complete computerized training record is also kept for each safety course taken by each employee.*

Non-Routine Tasks

When an employee is to perform a non-routine task presenting hazards for which he or she has not already been trained, the employee's supervisor will be responsible for discussing with the employee the hazards of the task and any special measures, including personal protective equipment (PPE) or engineering controls, that should be used to protect the employee. Wright State University's Department of Environmental Health and Safety will assist with the training for non-routine tasks, as necessary

RECORDKEEPING

Records must be generated and maintained to document compliance with the Hazard Communication Program. The following types of records will be maintained as designated below:

- ***Chemical Information Lists*** *shall be maintained by supervisory personnel. Old lists may be discarded by departments when revised. Copies of Chemical Information Lists shall be forwarded to EHS, 047 Biological Sciences II. The Department of Environmental Health and Safety (ESH) will archive copies of all Chemical Information Lists;*
- ***Training Records*** *shall be maintained by the department responsible for conducting the training and as identified in the Hazard Communication Program. Training records for employees must be maintained for at least the duration of employment. Records of Hazard Communication training conducted by the Department of Environmental Health and Safety (EHS) are maintained in 047 Biological Sciences II. Access to training records is available through:*
    - *Training records may also be obtained by phoning 937-775-2215 or by email at ehs@wright.edu.*

Maintain for one year.

- ***Safety Data Sheets*** *must be immediately accessible to workers and maintained by the individual(s) identified in this Program. EHS maintains copies of many SDSs and facilitates Wright State access to several web-based SDS libraries. Requests for SDSs may be made by email (ehs@wright.edu), telephone (937-775-2215), or during off-hour emergencies through the University Police (937-775-2215);*

    The HCS only requires you to keep safety data sheets for the chemicals that are present in your facility. However, another rule – 1910.1020 – requires employers to keep a record of employee exposures to hazardous chemicals for at least 30 years. You can either keep the safety data sheets for these hazardous products that you no longer use or you can keep another record that includes the chemical's identity and where and when it was used in your workplace.
- ***Medical Records*** *shall be maintained by the Environmental Health and Safety in accordance with the requirements OSHA 29 CFR 1910.1020 (Access to Employee Exposure and Medical Records);*
- ***Exposure Assessment/Monitoring Records*** *shall be maintained by EHS in 047 Biological Sciences II. Supervisors shall maintain copies of exposure assessment/monitoring records pertaining to operations and materials under their control; and*
- ***Incident Investigation Reports*** *shall be maintained by EHS in 047 Biological Sciences II.*

PROGRAM REVIEW

The Wright State Hazard Communication Plan will be reviewed and updated annually by the University Chemical Hygiene Officer to determine effectiveness in preventing employee exposures to hazardous materials and to maintain compliance with regulatory requirements.

LABORATORIES

Managers of teaching, research or analytical laboratories must comply with the requirements of the Wright State Laboratory Safety Program. This program is similar to the Hazard Communication Program in that employees must be notified of chemical hazards in the laboratories and the appropriate means for protection. Details of the Laboratory Safety Program are available on the EHS Web site at http://www.wright.edu/facilities-management-and-services/environmental-health-and-safety.

The Hazard Communication Program impacts laboratories as indicated:

- *Labels must not be removed or defaced on containers of chemicals brought into the workplace;*
- *Safety Data Sheets (SDSs) received with incoming shipments of hazardous chemicals must be maintained and readily accessible to employees during each work shift;*
- *Laboratory employees must receive those training elements specified in the Hazard Communication Program; and*
- *Laboratory employers that ship hazardous chemicals must ensure that containers are accompanied with a valid SDS, and that containers are labeled with the following information:*
    - Identity of the chemical(s);
    - Appropriate hazard warnings; and
    - Name and address of the generator of the chemical(s).

LABORATORY WARNING SIGNS

Laboratory spaces where designated biological, chemical, or radiological materials are used or where potential physical hazards exist are posted with warning signs. Physical hazards include high voltage, strong magnetic fields, and areas restricting personnel with pacemakers or metallic implants.

Researchers, staff, and visitors should note and understand hazard communication information provided on the warning signs, including specific hazardous agents (biological, chemical, radiological) and physical hazards (lasers, magnetic fields) present and used in the space, stated precautions (no food or drink allowed), and required personal protective equipment (lab coat, eye protection, gloves, etc.)

GHS Symbols

The GHS (Globally Harmonized System) symbols were developed by the United Nations as a world-wide standardized system for the classification and labeling of chemicals.

Biological Hazards

The biological hazard warning is used to identify locations, equipment or materials where infectious agents may create a health risk. It is used to identify specific equipment, containers, rooms, and waste items that are known or potentially contaminated with biohazardous materials.

Figure 9. Biohazard symbol

Radiation Hazards

Some laboratory facilities at Wright State contain radiation-producing devices or radioactive materials that generate or emit ionizing radiation (i.e., x-rays). Regulations promulgated by the Nuclear Regulatory Commission and Ohio Department of Health prohibit non-radiation workers from entering into areas

where potential for radiation exposure exists unless entrants receive training or are escorted by knowledgeable laboratory workers who can ensure that hazardous conditions are avoided.

Locations at Wright State where potential radiation exposure exists are demarcated with the radiation symbol:

Figure 10. Radiation symbol

The symbol also identifies specific equipment, containers, rooms and items that contain, or are potentially contaminated, with radioactive material.

The Department of Environmental Health and Safety's Radiation Safety Office provides training by request to workers who require unescorted access into these restricted areas. Supervisors are responsible for determining if employees require this training. Requests for training or additional information may be made by phone to (937)775-2169.

Class 3B or 4 Lasers

The laser warning sign indicates the presence of a laser with enough power to cause injury to your eyes or skin. Do Not Enter a room with this symbol unless you are sure the laser is off. Do Not Enter a room if you cannot determine if the laser is on or off from the lighted warning sign outside of the lab.

Each entrance to a room that contains a Class 3B or 4 laser shall be posted with an appropriate laser warning sign. ANSI Z136.1 recommends that signs and labels conform to a standard design, format, and content. In general, the following information should be included (see illustration below.)

- At position 1 above the tail of the sunburst, special precautionary instructions or protective action such as: Laser Protective Eyewear Required; Invisible Laser Radiation; Knock Before Entering; Do Not Enter When Light is On; Restricted Area.

Alternatively, position 1 above the tail of the sunburst can indicate special precautionary instructions or protective actions required by the reader such as:

- For Class 2 and Class 3R lasers and laser systems where the accessible irradiance does not exceed the appropriate MPE based upon a 0.25 second exposure; Laser Radiation - Do not Stare into Beam or View with Optical Instruments.
- For all other Class 3R lasers and laser systems; Laser Radiation - Avoid Direct Eye Exposure.
- For all Class 3B lasers and laser systems; Laser Radiation - Avoid Direct Exposure to Beam.
- For Class 4 lasers and laser systems; Laser Radiation - Avoid Eye or Skin Exposure to Direct or Scattered Radiation.
    - At position 2 below the tail of the sunburst, the type of laser (Ruby, Helium-Neon, Nd-YAG, etc.), or the emitted wavelength, pulse duration (if appropriate), and maximum output.
    - At position 3, the class of the laser or laser system

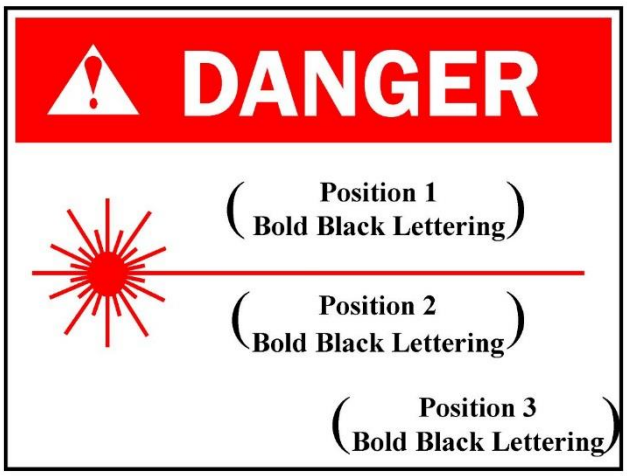


Figure 11. Laser sign template

High Voltage

Rooms or areas within rooms that contain high voltage equipment are posted with this warning sign. These areas can present significant hazards should a flood or water leak occur. Do not work on or handle open wiring or open devices that may be energized.

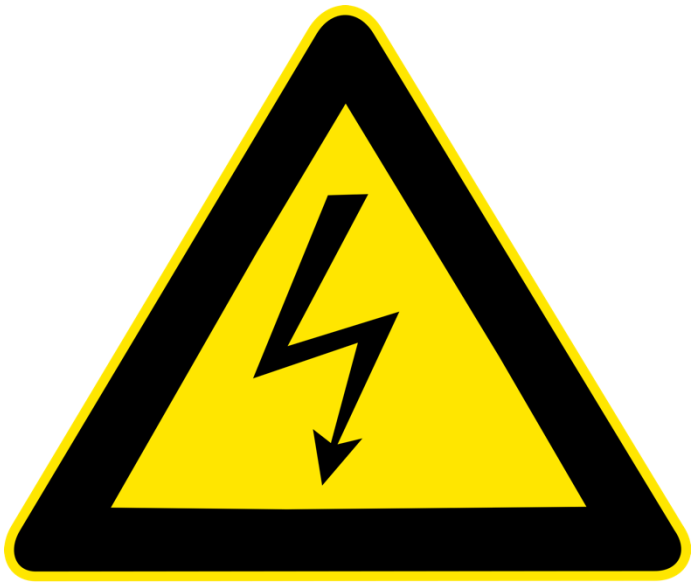


Figure 12. High voltage symbol

Strong Magnetic Field

This warning sign is common in rooms with Nuclear Magnetic Resonance (NMR) machines. Do not approach the magnetic field area with metallic objects, including tools or equipment.

Figure 13. Strong magnetic field symbol

No Pacemakers or Metallic Implants

Individuals with pacemakers, other medical electronic devices or metallic implants MUST STAY OUT of areas with this warning sign. This warning sign is common in rooms with Nuclear Magnetic Resonance (NMR) machines.

Figure 14. No pacemaker or metallic implant sign

APPENDIX A – EXPLANATION OF PICTOGRAMS

Health Hazards

Reproductive Toxicity	Harmful effects to sexual function and fertility in adult males and females, or on development of the offspring.
Target Organ Toxicity (Single exposure)	The significant health effects that can impair the function of a specific target organ (for example, the eyes or the kidneys) caused by a single exposure to a chemical. Toxic effects may be reversible or irreversible, immediate or delayed.
Target Organ Toxicity (Repeated exposure)	The significant health effects that can impair function of a specific target organ (for example, the eyes or the kidneys) caused by repeated exposure to a substance or mixture. Toxic effects may be reversible or irreversible, immediate or delayed.
Mutagenicity	Chemical exposure causing permanent changes in the amount or structure of the genetic material in a cell.
Aspiration Toxicity	The harmful effect of a liquid or solid chemical when it enters the oral or nasal cavity directly by being breathed in or indirectly entering the respiratory system as a result of vomiting

Flame

Flammable Gases	A gas that forms a flammable mixture with air at ambient temperature and pressure..
Flammable Aerosols	A chemical in a non-refillable container with 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 in another form; and meeting flammability test criteria
Self Reactives	Thermally unstable liquid or solid chemicals likely to undergo decomposition – even without interaction with air. These chemicals that are likely to undergo a stronger exothermic decomposition are classified under explosives.
Pyrophoric Liquids	A liquid chemical that, even in small quantities, is likely to ignite within five minutes after coming into contact with air.
Pyrophoric Solids	A solid chemical that even in small quantities is likely to ignite within five minutes after coming into contact with air.
Self-Heating	A solid or liquid chemical (other than a pyrophoric liquid or solid) that, without energy supply, is likely to react with air and generate heat. Differs from a pyrophoric liquid or solid because it will ignite only when in large amounts and after long periods of time (hours or days).

Emits Flammable Gas	Solid or liquid chemicals that, when in contact with water, emit flammable gases or that, by interaction with water, are likely to ignite spontaneously or to give off flammable gases in dangerous quantities.
Organic Peroxides	A carbon-containing compound having two oxygen atoms joined together (-O-O-) called a "peroxy" group. Organic peroxides can be severe fire and explosion hazards.

Exclamation Point

Irritant (Skin or Eyes)	Reversible damage to the skin or eyes following exposure to a chemical substance.
Dermal Sensitizer	An allergic-type reaction of skin tissue after repeated exposure to a chemical substance.
Acute Toxicity (Harmful)	– Harmful, health effects that occur soon after a single oral or dermal exposure to a chemical substance; or multiple doses given within 24 hours; or an inhalation exposure of four hours.
Narcotic Effects	Depression of the central nervous system, exhibited as sleepiness, reduced alertness, loss of reflexes, lack of coordination, and dizziness caused by chemical exposure. Can also be shown as severe headache or nausea and can lead to irritability, fatigue, and worsen memory, perception, and reaction time.
Respiratory Tract Irritants	Chemical exposure effects, characterized by localized redness, swelling, and fluid build-up that weakens respiratory function with

symptoms such as cough, pain, choking, and difficulty breathing.

Gas Cylinder

Gas Under Pressure

Gases in a container at a pressure of 29 psi (gauge) or more, are liquefied, or are liquefied and refrigerated

Corrosion

Corrosive (destructive) to skin or eyes	– Irreversible damage to the skin or eyes, including visible, localized death (necrosis) of skin tissue, burns, or serious eye damage following exposure to a chemical substance..
Corrosives	A chemical that will by chemical action materially damage or destroy metals.

Exploding Bomb

Explosives	A solid or liquid chemical that is 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 chemicals are included even when they do not evolve gases.
Self Reactives	Thermally unstable liquid or solid chemicals likely to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes chemicals classified under this section as explosives, organic peroxides, oxidizing liquids, or oxidizing solids.
Organic Peroxides	Any organic (carbon-containing) compound having two oxygen atoms joined together (-O-O-) called a "peroxy" group, where one or both of the hydrogen atoms have been replaced by organic radicals (with an unpaired electron). Organic peroxides are thermally unstable chemicals, which may undergo exothermic self-accelerating decomposition. In addition, they are likely to have one or more of the following properties: Likely to explode ✓ ***Burn intensely*** ✓ ***Be sensitive to impact or friction*** ✓ ***React dangerously with other***

substances

Flame Over Circle

Oxidizer A substance that readily yields oxygen to cause or intensify the combustion of organic material. Includes gases, liquids, and solids.

Skull and Crossbones

Acute Toxicity (Severe or Fatal) Severe, harmful health effects (that may include death) occurring soon after a single oral, dermal, or inhalation exposure to a chemical substance, or multiple exposures within a 24-hour period.

APPENDIX B -- EXAMPLES OF CHEMICALS CLASSIFIED AS PHYSICAL HAZARDS

Table 5. Examples of Chemicals Classified as Physical Hazards

CHEMICAL CLASSIFICATION	EXAMPLES
CORROSIVE TO METALS	Hydrochloric acid, sulfuric acid
EXPLOSIVE	Trinitrotoluene (TNT), nitroglycerin
FLAMMABLE (INCLUDES AEROSOLS, GASES, LIQUIDS, AND SOLIDS)	Aerosols - spray paint, hairspray Gases - acetylene, hydrogen Liquids - gasoline, acetone Solids - aluminum powder, sulfur
PRESSURIZED GAS	Oxygen, acetylene, helium
ORGANIC PEROXIDE	Methyl ethyl ketone peroxide, benzoyl peroxide, acetone peroxide
OXIDIZER (INCLUDES GASES, LIQUIDS, AND SOLIDS)	Gases – oxygen, fluorine, chlorine Liquids – perchloric acid, bromine Solids – strontium peroxide, aluminum nitrate
PYROPHORIC (INCLUDES LIQUIDS AND SOLIDS)	Liquids - tributylphosphine, triethylborane Solids – lithium, pentaborane, phosphorus
SELF-HEATING SUBSTANCE	Rags impregnated with linseed oil
SELF-REACTIVE SUBSTANCE	Benzene sulpho-hydrazide
SUBSTANCE THAT EMITS FLAMMABLE GASES IN CONTACT WITH WATER	Sodium, lithium, calcium carbide

APPENDIX C – TRAINING OUTLINE

Hazard Communication Training Outline

Training Requirement: Annual or when new hazard is introduced

1) Basics
   a) The Standard
   b) SDS
   c) Labels
   d) Health Information

1) Locations of Hazardous Materials
2) (M)SDS
   a) Physical And Chemical
   b) Characteristics
      i) Vapor Pressure
      ii) Flash Point/Boiling Point
      iii) Flammable Limits (LEL/UEL)
      iv) Autoignition Temperature
      v) Flash Point
      vi) Health Hazards
      vii) Exposure Limits
      viii) Carcinogen/Potential Carcinogen
      ix) Safe Handling Procedures
      x) Controls
      xi) Emergency And First Aid Procedures
      xii) Identity of Responsible Party
      xiii) Location of (M)SDS

3) Labels and Other Forms Of Warning
   a) Label Requirements
      Systems

4) Health Information
   a) Dose/Response
   b) Routes of Entry
   c) Acute vs. Chronic
   d) Health Hazards
      i) Toxic/highly toxic
      ii) Carcinogen
      iii) Corrosive
      iv) Irritants
      v) Sensitizers
      vi) Target Organ Effects
      vii) Protective Measures
         (1) Engineering Controls
         (2) Work Practices
         (3) PPE
5) Training Requirements
6) Written Program
7) OSHA General Duty Clause

Hazard Communication/GHS

Training Requirement: Annual or when new hazard is introduced

GHS

- Principles of harmonization
- Scope of GHS
- GHS Elements
- Written program
- Revised definitions
- New definitions
- Hazard Classification
  - Health and Environmental Hazards
  - Physical Hazards
- Labels
- New Label Requirements
- Signal Words
- Hazard Statements
- Precautionary Information
- GHS Label
  - Internal Labels
- Pictogram Shape and Color
- Basis of SDS
- Tiered Approach
- SDS Format
- Communication/Training
- Compliance Dates

APPENDIX D -- TRAINING RECORD

Training Item	Yes	Supervisor's Initials	Employee's Initials
An overview of the requirements of OHSA's hazard communication rules.			
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 labels was provided.			
Any special labeling present in the workplace was explained to me.			
Methods to lessen or prevent exposure 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.			
Emergency and contingency plans for medical, accident, and spill response were explained.			
Individual employee's responsibilities were reviewed and made known to me.			

Supervisor Signature_____

I certify that the above listed training was provided to me, and that understand the Hazard Communication Program and training and agree to abide by the policies and procedures set forth in the Hazard Communication Plan.

Signature of Employee Date

Signature of Department Head/Trainer Date

Retain all training records within your department. Provide a copy of the training records to the Department Manager and Training Coordinator. Information should be provided to the Department of Environmental Health and Safety for entry into the training database. A list of employees trained may be provided rather than individual sheets, if the employees are provided the training as a group and all of the information listed above is covered.

APPENDIX E -- CHECKLIST FOR IMPLEMENTATION

A summary of the key requirements for implementing the Wright State Hazard Communication Plan is provided in checklist form below. More detailed information on each of these requirements is provided on the pages referenced in parentheses. Additional guidance for implementing the program requirements can be obtained by consulting the answers to the questions found on pages 12- 15.

- ☐ Identify hazardous chemicals by work area
- ☐ Obtain and maintain SDSs of hazardous chemicals from manufacturers/distributors
- ☐ Develop a chemical inventory
- ☐ Devise a method to ensure that SDSs (or information contained therein) are accessible to employees
- ☐ Ensure that labels are legible and list the chemical name and necessary hazard warning information
- ☐ Inform employees of Wright State Hazard Communication Plan
- ☐ Inform employees of job-site specific chemical hazards and available protective measures for reducing potential exposure
- ☐ Provide new information on chemical hazards as it becomes available
- ☐ Inform employees of hazards related to non-routine tasks

Identify methods to inform other employees, of a multi-employer worksite, of hazards

APPENDIX F -- RESOURCES FOR CHEMICAL HAZARD INFORMATION

1. Toxicology Literature Online (TOXLINE)

TOXLINE is the NLM's online, interactive collection of toxicological information containing references to published material and research in progress. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TOXLINE

2. Toxicology Data Network (TOXNET)

TOXNET is a computerized system of toxicologically oriented factual data banks managed by the NLM. Many NIH facilities with NLM accounts may access this database directly, those facilities which do not have access to the NLM can request assistance from the NLM. http://toxnet.nlm.nih.gov/

3. Medlars Online (MEDLINE)

The MEDLINE is the NLM file of bibliographic citations from approximately 3,400 medical and biomedical journals. https://www.nlm.nih.gov/bsd/pmresources.html

APPENDIX G -- EASY ACCESS TO SDS BY QR CODES

Instructions for Use

Note: Your smartphone or tablet must have an app available to use QR codes. To download, visit your carrier's app store.

1. Open the QR code reader application on your smartphone or tablet.
2. Hold your device over the appropriate QR code until the code is clearly visible on the screen.
3. Your device will either read the code automatically or require you to snap a picture to go to the desired link.

Table 6. QR Code access to SDS websites

http://www.msds.com/	https://us.vwr.com/store/search/searchMSDS.jsp	http://www.fishersci.com/us/en/catalog/search/sdshome.html	https://www.sigmaaldrich.com/safety-center.html

APPENDIX G -- FREQUENTLY ASKED QUESTIONS

1. What is a hazardous chemical?

OSHA's Hazard Communication Standard (29 CFR 1910.1200) broadly defines a hazardous chemical as any chemical whose presence or use is a physical hazard or a health hazard.

Chemicals that are considered "physical hazards" include:

• combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics, and unstable or water-reactive chemicals.

Chemicals that are considered "health hazards" include:
• hepatotoxins, nephrotoxins, carcinogens, teratogens etc.

Supervisors and employees may wish to consult the OSHA Hazard Communication Standard for more detailed definitions of both physical and health hazards. Additional information can be obtained by attending EHS training programs, or calling EHS at (937) 775-2215.

The Wright State Hazard Communication Plan uses OSHA's broad definitions to refer to the hazardous properties which may be associated with chemicals. However, to determine whether certain chemicals pose physical or health risks to employees, and require inclusion in the Wright State Hazard Communication Plan, specific attention should be given to the exposure potential of chemicals present in the work area. Exposure potential is dependent on the following:

a) The quantity of the chemical used;
The manner in which the chemical is used; and
The means available to control release of or exposure to the chemical.

Additional factors that may influence the effects of chemicals on the health of employees are the potency or toxicity of the chemical and any characteristics of the persons using the chemical that may place them at increased risk (e.g., medical conditions, sensitivity to the chemical).

2. How can I get a copy of OSHA's Hazard Communication Standard?

A copy of the standard is available by contacting EHS at (937) 775-2215 or downloaded here: https://www.osha.gov/dsg/hazcom/HCSFinalRegTxt.html

3. What sources of information are available for compiling a list of hazardous chemicals?

As an aid in determining substances which are considered to be hazardous, supervisors should consult OSHA's Hazard Communication Standard for detailed explanations and definitions of categories of hazardous chemicals. The manufacturer's SDSs can be used to identify important physical and health hazard data. Information on developing and maintaining chemical listings and performing chemical hazard assessments can be obtained by contacting EHS (937)775-2215, or visit www.osha.gov and type in "Hazard Communication."

4. Why can't I simply rely on the manufacturer's/ supplier's SDS to determine whether a chemical is hazardous?

While the chemical and physical properties of the material (e.g., its volatility, flammability, reactivity), as well as its toxic properties (e.g., carcinogen or reproductive hazard), can be used to define the hazard potential the material presents to employees, the risk of experiencing harmful health effects varies with the degree of exposure in a given work operation. Therefore, the determination of what constitutes a hazardous chemical needs to be made by the supervisor for his/her work area. Factors influencing the degree of exposure include the quantity of chemical, the manner in which it is used, and the means available to control the release of, or exposure to the chemicals.

5. What information must be maintained and made accessible to employees at the worksite?

A current inventory list of chemicals identified as potentially hazardous, SDSs (or information contained within) for those chemicals, and labels that identify the chemical and list the critical hazard information must be maintained and made available at the worksite.

Wright State chemical users should factor in their own working requirements and conditions of use when selecting appropriate work practices, personal protective equipment, and engineering controls.

The chemical inventory should consist of all chemicals that are produced, imported, or used. The chemical inventory should be complete and contain, at a minimum, the following:

- *chemical name;*
- *CAS Number;*

- *common name;*
- *synonyms;*
- *product/mixture name (if applicable); and*
- *percentage of ingredients in product/mixture (if applicable).*

Chemwatch is Wright State's chemical inventory computerized/electronic database. This platform is ideal for future sorting, additions, deletions, and status reports.

6. What if I find that the manufacturer's/suppliers SDS provides incomplete information or is missing critical information?

The NLM has several databases that can be used to access additional information (see appendix B). If you need information, contact EHS (937)775-2215.

7. What if the manufacturer's/supplier's SDS does not include the names or identity of the chemical component(s)?

Information relating to the chemical identity, or name of a hazardous chemical, may be withheld by the chemical manufacturer, importer or employer if it is deemed to be a trade secret. However, information about its harmful properties cannot be withheld and must be included in the SDS. Also, the chemical identity must be made available to health professionals, and certain designated individuals so they can render medical treatment, to bring about protective measures in an emergency or, when requested in non-emergency situations, to protect employees who may be potentially exposed.

For such disclosures, a written statement of confidentiality may be required prior to release of the chemical identity or, in an emergency situation, as soon as circumstances permit.

8. If an employee works with several hazardous chemicals in a process, is it necessary to maintain an SDS for each hazardous chemical present?

Yes, employees must have access to information related to potentially hazardous chemicals identified in each work area. This information may be the manufacturer's SDS or some other source that contains pertinent health and safety information. The supervisor may also choose to develop safe operating procedures for processes that cover groups of hazardous chemicals designed to identify and control the collective hazards associated with these chemicals.

9. Do I have to re-label all incoming containers of hazardous chemicals?

Manufacturers and suppliers of hazardous chemicals are required to label their containers with the identity of the chemical and the appropriate hazard warnings. Therefore, in most cases, incoming containers will not have to be relabeled. If the majority of employees in a work area speak a language other than English, supervisors may add the necessary information in that language as long as the information is presented in English as well.

10. Do I need to label transfer containers?

When transferring hazardous chemicals from a labeled container to another, the portable or transfer container does not have to be labeled if only one person handles the container and the container is filled and emptied by that person during the workday. In situations where other persons may be exposed to the chemicals present in the portable or transfer container, it is always prudent to label the container to inform those who are potentially exposed about the hazards associated with the chemical and the necessary precautions to minimize their exposure.

11. In addition to labels, what other forms of warning should be used to identify the presence of hazardous chemicals?

In some cases, warning signs on doors should be used to alert persons not to enter the work area unless they are aware of the necessary safeguards. Door signs should also provide the name and telephone number of the person(s) to contact in case of emergency. This information is especially important for visitors or employees not assigned to that area.

12. If SDSs and labels are maintained at the worksite, why is it necessary to train employees?

SDSs and labels have limited value unless the employees understand how to use the information and are aware of actions to be taken to avoid or minimize hazardous exposures and thus the occurrence of adverse health effects. Training provides this opportunity and allows supervisors to assess their employees' level of understanding of the material and their use of written operating procedures.

13. What additional training programs covering chemical safety are available?

EHS offers a program entitled Laboratory Safety. Contact the University Chemical Hygiene Officer for course information. Additional training in Hazard Communication

for supervisors, support, and administrative personnel is provided by EHS on an as needed basis.

14. What if I believe that I have not been provided with the required hazard information?

All Wright State employees have the right to discuss their safety and health concerns with their supervisor or EHS without fear of reprisal for expressing their concerns.

15. Are contract employees covered under the Wright State Hazard Communication Plan?

Employees working under contract at the Wright State are subject to their own employer's Hazard Communication Program, to the extent that hazardous chemicals are being supplied and used by the contractor. Contract employees potentially exposed to chemicals present at Wright State can obtain Wright State Hazard Communication Plan information from the Wright State Program Manager for the contract. Wright State contractors must submit a listing of hazardous chemicals that they bring into Wright State facilities, and provide corresponding SDSs to the Wright State Program Manager for the contract.

16. Who can I contact if I have questions on implementing any of the requirements of the Wright State Hazard Communication Plan?

A toxicologist within EHS provides technical guidance on matters pertaining specifically to the Wright State Hazard Communication Plan. Contact EHS (937)775-2215 to obtain the necessary assistance.

17. What if I or my employee handle chemicals only in unopened, sealed containers?

If under normal conditions of use, such as in a warehouse or in a supply store, you or your employees only handle chemicals in unopened containers, you must:

- *Ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.*
- *Maintain copies of any safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals.*

- *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.*
- *Ensure that the safety data sheets are readily accessible to you or your employees during each work shift when they are in their work areas.*
- *Ensure that you or your employees are provided with information and training to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.*

18. What about hazardous chemicals in laboratories?

The HCS has more limited requirements for employers at laboratories. However, laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule.

Laboratory employers must:

- *Ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.*
- *Maintain any safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees during their shift when they are in their work areas.*
- *Ensure that employees are provided all the required information and training, except for the location and availability of the written hazard communication program.*
- *Ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with 1910.1200(f), and that a safety data sheet is provided to distributors and other employers in accordance with 1910.1200 (g)(6) and (g)(7).*

29 CFR 1910.1450, Occupational exposure to hazardous chemicals in laboratories is a rule that applies to certain laboratories, instead of the Hazard Communication Standard. 29 CFR 1910.1450 applies to all employers engaged in the laboratory use of hazardous chemicals as defined below. In laboratories where this rule applies, it applies instead of the HCS.

Laboratory use of hazardous chemicals means handling or use of such chemicals in which all of the following conditions are met:

- *Chemical manipulations are carried out on a laboratory scale*

- *Multiple chemical procedures or chemicals are used*
- *The procedures involved are not part of a production process, nor in any way simulate a production process*
- *Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals*

Laboratory scale means work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. It excludes those workplaces whose function is to produce commercial quantities of materials.

Protective laboratory practices and equipment means those laboratory procedures, practices, and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals.

20. How does hazard communication work?

Hazard communication begins when chemical manufacturers and importers evaluate the chemicals they produce or import; classify the chemical's health, physical, and other defined hazards; and determine the appropriate hazard categories for each class of hazard.

Chemical manufacturers and importers must prepare labels for their products that include signal words, pictograms, hazard statements, and other elements that reflect each hazard class and category.

They must also prepare a safety data sheet for each product. A safety data sheet includes detailed information about the product's hazards. Manufacturers and importers must provide a safety data sheet and a label with each product that they ship to a customer. Employers and employees need this information about the product's hazards to know how to safely handle the product.

The part of the process that affects all employers is the written hazard communication plan. The plan, which must be specific to each workplace, must list the hazardous chemicals at your facility and describe how you will use safety data sheets, labels, and training to inform employees about the product's chemical hazards and the necessary precautions.

APPENDIX H -- CONTRACTOR AGREEMENT TO LIST AND DESCRIBE USE OF HAZARDOUS MATERIALS

Contractor Information:
Company name:_____
Address:_____

_____
Phone number:_____
Fax number:_____
Wright State Project Manager:_____
Department:_____

Phone number:_____

Project
location:_____
Date project is scheduled to
begin:_____end:_____

List any hazardous chemicals/materials that are to be brought onto Clemson University's Campus, or to any Clemson University facility. Describe how these chemicals/materials are to be used as well as how they will be stored.

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A copy of this of this completed form must be sent to the Wright State Program Manager and EHS (email to ehs@wright.edu) prior to bringing any hazardous chemicals/materials onto Wright State University property.