



UNIVERSITY *of* NEW HAMPSHIRE

# **Hazard Communication Program**

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<http://www.unh.edu/ehs/occsafety/UNH-Hazard-Communication-Program.pdf>

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## I. Introduction

The University of New Hampshire (UNH) is firmly committed to providing a safe and healthy work environment for all of its employees. In order to improve communication and training associated with the use of hazardous substances, this Hazard Communication Program (HCP) has been established for non-laboratory work areas. This program is designed to help maintain a healthy work environment by increasing employee and student awareness of workplace chemicals and their potential health effects, safe work practices, and emergency procedures. The HCP covers all use of hazardous materials on campus except the following:

- Laboratory Reagents (for procedures applicable to laboratories, see the UNH Laboratory Safety Plan at <http://www.unh.edu/ehs/BS/UNH-Laboratory-Safety-Plan.pdf>.)
- Hazardous waste;
- Tobacco or tobacco products;
- Wood or wood products;

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

- Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace;
- Pesticides; or
- Work operations where employees only handle substances in sealed containers which are not opened.

**Note:** Warehouse, stockrooms and shipping/receiving-type operations, where chemicals are only handled in sealed containers, need only keep labels on containers as they are received.

The HCP should not be considered the only reference for health and safety concerns. OSHA Standard 29 CFR 1910.1200 and the State of New Hampshire Revised Statute Chapter 277-A references “Toxic and Hazardous Substances,” which are covered in this program. However, laboratory operations within academic building are superseded by OSHA Standard 29 CFR 1910.1450 and are addressed in the UNH Biological and Chemical Safety Plan. This document provides a compilation of suggested work practices, protocols, and systems to work safely within UNH research and instructional laboratories. In addition, the Office of Environmental Health and Safety (OEHS) is available to address health and safety concerns. This document will be evaluated and updated annually by the UNH Occupational Safety Committee (OSC). This document contains several appendices with essential information for University faculty and staff. These appendices are always changing or evolving and should not be considered a fixed part of the Hazard Communication Program. The appendices will be evaluated by the OEHS on a routine basis.

At the time of publishing, the Occupational Safety Committee was composed of the following members:

Barbara Beaudette	Tracey Lauder
Susanne Bennett	Steve Luber
Susan Bradley	Alexis Sablock
Dennis Dupuis	Gary Sears, Chair
Guy Eaton	Julie Simpson
Eric Gibson	Roger Wells
Judy Koski	

This document was prepared under the direction of the Office of Environmental Health and Safety.

## II. Regulatory Requirements

This program shall be used in conjunction with other OEHS programs. Associated safe work practices such as personal protective equipment should be used along with the safe handling, storage and disposal of hazardous substances. In addition, this program is intended to comply with the following requirements:

- New Hampshire RSA 277-A “Worker's Right to Know Law”
- New Hampshire Lab 1403.36 “Hazardous and Toxic Substances Law”
- OSHA Hazard Communication Standard (29 CFR 1910.1200)

The OSHA Hazard Communication Standard (see [Appendix A](#)) requires the following:

- Hazard Determination;
- Development, implementation and maintenance of a written hazard communication plan;
- Regulation and maintenance of container labeling and other types of warning;
- Regulation and maintenance of MSDS; and,
- Employee information and training.

Regulatory Standards and General Industry guidance can also be found on OSHA’s website at:

<http://www.osha-slc.gov/SLTC/hazardcommunications/index.html>

## III. Application

### A. Personnel and Operations Covered under HCP

#### 1. Personnel

- a. UNH faculty
- b. Staff
- c. Contractors

**Note:** For UNH contractors, hazard communication is applicable through clauses in UNH contracting guidelines. Hazard communication requirements are also applicable to acquisition and disposal of products that contain (or have contained) hazardous materials.

#### 2. Operations

- Work conducted under the authority of UNH.
- Equipment, materials and property managed by UNH, except where noted below.
- Equipment, materials, and property managed by UNH, except where noted in the introduction of this program.

## IV. Roles and Responsibilities

In order for the Hazard Communication Program to be effective, all affected individuals must clearly understand and take an active role in meeting their responsibilities. Due to the wide distribution of employees and diverse operations at UNH, a thorough understanding of roles and responsibilities is necessary to meet the requirements of this program.

## **A. Program Manager Responsibilities**

The Occupational Safety Officer will act as the Program Manager and is responsible for the development and management the Hazard Communication Program throughout UNH. Specific responsibilities include:

- Evaluating and updating the Hazard Communication Plan on an annual basis or as procedures or conditions change.
- Performing and coordinating a review of University facilities that have not maintained an up-to-date inventory.
- Performing field audits, soliciting feedback and reporting to Department Chairs and OEHS.
- Developing Hazard Communication Training for all affected employees.
- Providing safety expertise and regulatory guidance to University personnel regarding purchasing, use and storage of hazardous substances.
- Recommending Personal Protective Equipment and safe handling procedures for specific operational needs.

## **B. Principal Investigator Responsibilities**

Principal Investigators (PI) are responsible for implementing the Hazard Communication Program at the local operational level. PIs are also responsible for ensuring safe use of hazardous substances for all areas under their supervision. Responsibilities of PI's include:

- Ensuring that individuals working under their supervision know where to find MSDS (as hard copies or electronic files). MSDS can be found on the Chemical Environmental Management System (CEMS) at <http://www.cems.sr.unh.edu/SearchMSDS.shtml#searchform/>.
- Ensuring that work site chemical inventories are maintained and continually updated on the CEMS website (<http://www.cems.sr.unh.edu>).
- Providing information and feedback to the OEHS as requested.
- Ensuring that hazardous chemical containers are properly labeled.
- Ensuring that faculty, staff and students receive timely and appropriate task-specific Hazard Communication Training and additional training when a new chemical is introduced into the workplace or when there is substantial change in chemical usage or work practices.
- Complying with OSHA regulations for multi-employer worksites, by ensuring that contractors are aware of the requirements associated with this Program while working at UNH facilities.
- Providing advance communication to the OEHS and all affected groups when introducing a material into the workplace that may present a hazard to persons other than the user.
- Ensuring that purchasing of hazardous substances is subject to all applicable requirements in this Program.
- Providing oversight and obtaining Environmental, Health, and Safety consultation as needed for issues regarding hazardous materials purchasing and use, Material Safety Data Sheets (MSDS), hazard identification, and protective measures.
- Evaluating the hazards of chemicals through review of MSDS and chemical use in the workplace.
- Determining any necessary disciplinary action for violations of this Program.
- Providing management commitment and support for successful implementation and maintenance of this Program.

## **C. Employee Responsibilities**

Each employee is responsible for workplace safety and must act within the guidelines provided in applicable MSDS. Responsibilities of employees include:

- Participating in Hazard Communication training before working with a hazardous material.
- Learning the procedures associated with waste minimization, disposal, and spill reporting.

- Reading and understanding the MSDS for each hazardous material that he/she will handle or may be exposed to at work.
- Following the measures specified in the MSDS for material handling and use of personal protective equipment.
- Following all site procedures for acquisition, labeling, storage, and handling of hazardous materials.
- Providing applicable MSDS along with other relevant information to emergency personnel and medical care providers in the event of personnel exposure to a hazardous material.

#### **D. Purchasing Responsibilities**

Procurement Departments or individual purchaser's responsibilities include:

- Maintaining an up-to-date chemical inventory with the Chemical Environmental Management System (CEMS) at <http://www.cems.sr.unh.edu>.
- Ensuring that MSDS accompany all incoming hazardous chemicals as required on purchase request.

#### **E. Shipping and Receiving Personnel**

Shipping and receiving personnel responsibilities include:

- Inspecting incoming chemical products for improper labeling and withholding distribution of non-conforming products.
- Participating in Hazard Communication training.

#### **F. Contractor Responsibilities**

The senior onsite manager, foreman, or supervisor of contractor employees who use, handle, or store hazardous substances at UNH must ensure that hazard information concerning materials acquired and brought on site by the contractor is made available to all affected groups. The following actions are necessary to fulfill this requirement:

- Developing and implementing a Hazard Communication Program.
- Ensuring that MSDS (as hardcopies or electronic files) are available for all hazardous chemicals in the work area, stored or in use, during all shifts.
- Ensuring that hazardous chemical containers are properly labeled.
- To comply with OSHA requirements for multi-employer worksites, providing advance communication to the OEHS and all affected groups when introducing a material into the workplace that may present a hazard to persons other than the user.
- In the event of an incident involving exposure to or release of a hazardous substance, cooperate with emergency response personnel by providing a copy of the MSDS and other relevant information.
- Ensuring proper use and storage of hazardous substances.
- Ensuring proper storage and disposal of hazardous waste per regulations and UNH requirements.
- Having knowledge of spill reporting thresholds and internal/external communication requirements.
- Minimizing storage volume of hazardous substances and excess product.
- Provide UNH with all MSDS for chemicals brought onto University property or in areas where University employees may be affected.
- Contractor requirements checklist is included as [Appendix B](#) and [C](#).

## **G. Office of Environmental Health and Safety (OEHS) Responsibilities**

OEHS Responsibilities include:

- Maintaining the MSDS on-line service.
- Training UNH personnel.
- Maintaining training records.
- Evaluating workplaces with regard to chemical use and storage.
- Providing regulatory and technical guidance and support to UNH departments regarding Hazard Communication standards.
- Developing written programs, guidance documents and employee training materials to support UNH Safety Programs.

## **V. Chemical Product Inventory**

This Hazard Communication Program describes how the University provides MSDS, labels, and other warnings, employee information and training, and inventories of hazardous chemicals present in the workplace. A copy of this Hazard Communication Program is maintained in laboratories with biological or chemical agents present and/or available on OEHS website at:

<http://www.unh.edu/ehs/occsafety/UNH-Hazard-Communication-Program.pdf>

In addition, the Laboratory Safety Officer will maintain a master copy at:

**University of New Hampshire  
Office of Environmental Health and Safety  
11 Leavitt Lane, Perpetuity Hall  
Durham, NH 03824  
603-862-4041**

### **A. Inventory of Hazardous Chemicals**

The inventory of all the hazardous substances used throughout the work area is listed on the CEMS website. This inventory includes the name of the chemical, trade names, name of manufacturer and primary location of use. When new chemicals are received, this list must be updated by the chemical purchaser and an MSDS must be obtained for the chemical prior to chemical use.

## **VI. Material Safety Data Sheets (MSDS)**

The purpose of an MSDS is to provide safety data about a specific hazardous substance. The MSDS contains physical data and other information specified by OSHA. A manufacturer or importer must generate an MSDS for each hazardous substance covered by the OSHA Hazard Communication Standard. While the format of an MSDS is optional, it usually covers information listed in [Appendix D](#) (includes a description of the sections and the relevant information contained in each).

It is common practice for a manufacturer or importer to provide an MSDS that is reproduced on paper. UNH has developed CEMS (<http://www.cems.sr.unh.edu>) to allow users the ability to access MSDS online.

### **A. Accessibility to MSDS**

The OEHS provides an online MSDS service through the CEMS website. The web address is listed below:

<http://www.cems.sr.unh.edu>

If an MSDS is not available, it may also be obtained by contacting the vendor directly. Many chemical product manufacturers offer general public access to their MSDS via their corporate web sites. A compilation of manufacturer's MSDS sites is located at:

<http://www.msdsprovider.com/>

The "**National MSDS Site**" is a list of over 325,000 MSDS maintained by the Department of Defense. This site can be accessed through the following web address:

<http://www.siri.org/>  
<http://www.msdssearch.com/> (alternate site)

If you cannot find an MSDS and do not have access to the Internet or you need help in obtaining an MSDS, contact OEHS (862-4041). Any employee without an Internet connection can review and print an MSDS at OEHS between the hours of 8:00 A.M. and 5:00 P.M., Monday through Friday, excluding holidays officially designated by the University.

#### **B. MSDS Updates**

Manufacturers and importers of hazardous substances are required to replace out-of-date or incorrect MSDS. The responsibility for the accuracy of MSDS information rests solely with the originator of an MSDS. However, if an error is discovered, the originator, whose name and address must be listed on each MSDS, should be notified.

#### **C. Purchasing Procedures**

At least one copy of an MSDS must be supplied by the manufacturer or importer to each purchaser of a hazardous substance with their first purchase. In addition, at least one copy of any subsequent revision of the MSDS must be provided by the manufacturer or importer of each substance. Most manufacturers or importers will provide additional copies upon request by the purchaser, and many of them include a copy with each delivery to a customer.

#### **D. Receiving Procedures**

If an MSDS is not received or otherwise available, the receiver must request one from the manufacturer. A sample letter is included as [Appendix E](#), which can be used to request an MSDS from a manufacturer. If an MSDS is not available, one must be obtained prior to use of the hazardous substance in the work area.

### **VII. Container Labeling**

Each workplace container that has hazardous substances inside shall be labeled, tagged, or marked to identify the material and to provide appropriate warnings. Alternative methods such as signs, placards, process sheets, and operating procedures are acceptable for individual stationary process containers, as long as the information is conveyed to all affected persons. There are few exceptions to the requirement of explicit, attached labels. For exemptions, see [Section VII-B](#).

#### **A. General Requirements**

A label that identifies the contents and provides a hazard warning must be affixed to all containers of hazardous chemicals which could pose a physical or health hazard to exposed employees in the workplace. Appropriate labels are typically affixed by the chemical manufacturer or distributor.

The following rules and guidelines apply to all chemical containers:

- Hazardous substances regulated by OSHA substance-specific health standards in 29 CFR 1910 shall bear labels in accordance with the applicable standard.
- At a minimum, the label must identify the chemical, and contain hazard warnings (including target organ effects). The chemical identity provided on the label must be the same as or cross-referenced to the same identifier on the MSDS and inventory. Transfer containers, or secondary containers, must be labeled prior to transfer of hazardous chemicals.
- Containers that are or become hazardous waste shall also bear Hazardous Waste labels in accordance with the UNH Hazardous Waste Program.
- Containers that contain or have been contaminated with infectious biological materials must have the “biohazard” symbol or the word BIOHAZARD written on it.
- Incoming containers received with defaced or missing labels should be rejected unless the contents are definitely known, and the container is immediately labeled with the appropriate information.
- Labels shall not be removed or defaced, and must remain intact during use.
- Labels must be legible, in English (another language may be used in addition to English when appropriate), and prominently displayed on the exterior of the container.
- Preprinted and manufacturers' labels must be revised within three months of receipt of significant new information, and before the material is reintroduced into the worksite.
- The OEHS strongly recommends that labels also contain the following supplemental information:
  - Name of owner or responsible person.
  - Date dispensed or mixed.
  - Expiration date.

Examples of labels commonly found throughout the workplace are shown and described in [Appendix F](#).

## **B. Labeling Exceptions**

Substances exempt from labeling requirements include:

1. Any substance already exempt from this Hazard Communication Plan.
2. Food, food additive, cosmetic, drug or medical/veterinary devices subject to labeling requirements defined by the Food and Drug Administration (FDA) or Department of Agriculture (USDA) in the Federal Food, Drug, Cosmetics Act.
3. Agricultural or vegetable seed treated with pesticides and labeled according to the Federal Seed Act by the USDA.
4. Chemicals defined under Toxic Substance Control Act (TSCA) and subject to its labeling requirements. **Note:** TSCA controls the manufacture and distribution of new chemicals and does not apply to commercially procured chemicals.
5. Pesticides subject to labeling requirements established by the Environmental Protection Agency (EPA).
6. Consumer products or hazardous substances subject to a consumer product safety standard and regulated by the Consumer Product Safety Commission.

## **C. Inspection of Incoming Containers**

Chemical manufacturers and importers are required to label containers of chemicals offered for sale or distribution. When received, each container of a hazardous chemical must be:

1. Clearly labeled as to contents.
2. Clearly labeled with the manufacturer's name and address.

3. Clearly labeled with an appropriate hazard warning.

All containers should be inspected to ensure correct labeling. Containers that do not conform to the above requirements will be brought to the attention of the manufacturer or supplier with a request for replacement labels. The purchaser of the chemical will make this notification to the vendor and apply appropriate labeling prior to distribution of the chemical to end-users. Containers that are leaking, damaged or have non-conforming labels must be withheld from distribution to University employees.

#### **D. Chemicals Contained in Unlabeled Pipes**

Employees required to perform tasks involving potential exposure to chemicals contained in unlabeled pipes will be provided, prior to commencement of this activity, MSDS information about the hazards of those chemicals and additional instruction and training by their supervisor.

#### **E. Secondary Containers**

Hazardous chemicals may be transferred from the primary container in which they were originally received, such as a 55-gallon drum, into a secondary container for more convenient use. Secondary containers of hazardous chemicals that are used by more than one person or for longer than one work shift must be labeled with a copy or facsimile of the original manufacturer's label, or a locally-produced label containing the information listed above in [Section VIII-A](#).

Regardless of where they are used, containers into which hazardous chemicals have been transferred for use during a single work shift solely by the person performing the transfer do not need to be labeled; however, labeling of these containers is strongly encouraged as a good operating practice.

### **VIII. Trade Secrets**

Manufacturers and importers may withhold the specific identity of a chemical based on the trade secret provisions of the OSHA Hazard Communication Standard. However, this information may be obtained under certain circumstances by qualified individuals, as follows:

#### **A. Emergency Situations**

1. If a treating physician or nurse determines that a medical emergency exists and there is a need to know a specific chemical identity to ensure proper treatment, the manufacturer or importer must immediately provide the information to the physician or nurse.
2. The manufacturer or importer may obtain, upon request, a written statement of need that contains the information described in [Section VIII-B](#) below, if circumstances permit.

#### **B. Non-Emergency Situations**

1. Requests for trade secret information in non-emergency situations should be made to the UNH OEHS to contact the manufacturer or importer of the chemical in question.
2. This request should be in writing and should contain sufficient detail regarding the need for one or more of the following:
  - a. To assess the hazards to which an exposed employee or exposed employees will be subjected;
  - b. To conduct or assess sampling of the workplace to determine potential exposure levels of exposed employees;
  - c. To conduct pre-assignment or periodic medical surveillance programs;
  - d. To provide medical treatment to exposed employees;
  - e. To select or assess appropriate personal protective equipment for exposed employees;

- f. To design or assess engineering controls or other protective measures; and,
  - g. To conduct studies to determine health effects of exposure.
3. The request must explain why general information concerning the properties and effects of the chemical, its control measures or monitoring, and the diagnosis and treatment of harmful exposure will not satisfy the specific occupational health need.
  4. The requester of this information should outline what procedures will be taken to maintain confidentiality. It may be necessary for the requester to sign a confidentiality agreement.

### **C. Non-Routine Tasks**

Exposed employees required to perform non-routine tasks involving the use of hazardous chemicals (such as those that might occur during a temporary assignment to a different job) will be provided MSDS information about the hazards of the new task and, where appropriate, additional instruction and training by their supervisor.

## **IX. Training**

OSHA requires Hazard Communication training for employees who use or are potentially exposed to hazardous substances on a routine basis or in a foreseeable emergency. The diversity and distribution of operations with hazardous substances within the University necessitates all employees, students, and visitors who handle, store, use or ship chemicals to attend general Hazard Communication Training. Employees, students, and visitors who handle hazardous substances should also receive task-specific training by their supervisor.

It is important that the training be appropriate to an exposed employee's educational background, linguistic abilities, and specific circumstances of each work area. Since these factors vary over a wide range, no one training method or curriculum will meet the needs of all exposed employees. Therefore, flexibility is given to those responsible for providing that training.

### **A. Training Materials**

To assist with training, the UNH OEHS has developed Hazard Communication training materials.

### **B. Training Conditions**

All employees who handle, store, use or ship hazardous substances must be trained under the following conditions:

- When an exposed employee is first hired.
- When an exposed employee is transferred to a different job.
- When the chemical hazards in an exposed employee's work area change.
- When a new hazard is introduced.
- During the employee's normal work hours and at no expense to the employee.
- Attendance is mandatory for all potentially exposed employees. Annual refresher training is recommended.

### **C. Attendance Records**

A record of attendance that includes the employees' names, signatures, social security number, department, the date of the training, and the type of training will be taken at each training session. These records will be made available if requested during an on-site inspection or inquiry by OSHA. A sample Hazard Communication Training Attendance Form is included as [Appendix G](#).

## **D. Curriculum**

Elements of the Hazard Communication training curriculum include:

- Scope and Purpose of the Hazard Communication Standard (“Employee Right-to-Know” law).
- Requirements of the Hazard Communication Standard.
- Hazard recognition and nature of hazards.
- Chemicals in the workplace (by chemical group or specific).
- Hazard control measures (engineering controls, work practices, and personal protective equipment).
- Emergency Procedures.
- Understanding the MSDS.
- Labeling System.

[Appendix H](#) provides an Overview of the OSHA Hazard Communication Training Requirements. [Appendix I](#) is the Hazard Communication Classroom Training Curriculum. Task-specific Hazard Communication training would be information ideally incorporated into written operating procedures for routine and non-routine tasks. Additional training requirements for hazardous waste and spill response are presented in the UNH Hazardous Waste and SPCC Programs.

## **X. Recordkeeping**

Medical examination and consultation records, including test results and physician's written opinions, must be maintained by the employee or student's supervisor/department. These records will be kept, transferred and made available for at least the duration of the worker's employment plus 30 years in accordance with 29 CFR 1910.20, “Access to Employee Exposure and Medical Records.”

Exposure monitoring records, including sampling results and reports, will be maintained by the OEHS. These records will be kept, transferred and made available for at least the duration of the worker's employment plus 30 years in accordance with 29 CFR 1910.20, “Access to Employee Exposure and Medical Records.”

Training records, including handout materials, agendas and signed training attendance records, will be maintained by the OEHS. These records will be maintained for the duration of the worker's employment.

The hazardous chemical inventory will be maintained by individuals through the CEMS. The link to CEMS is:

<http://www.cems.sr.unh.edu>

## **XI. Program Evaluation**

In order to ensure that this Hazard Communication Program continues to be effective, the program will be reviewed annually by the OEHS as required by OSHA. Conditions that could warrant additional review of the program include:

- Identification of a chemical hazard not covered by this program.
- An injury or “near miss” resulting from a chemical exposure.
- A change in the use of a chemical or introduction of new chemical products.
- Employee safety committee or contractor concern.

## Appendix A – OSHA Hazard Communication Standard

OSHA -- Occupational Safety & Health Administration  
U.S. Department of Labor

Regulations (Standards - 29 CFR)  
Hazard Communication. - 1910.1200

Regulations (Standards - 29 CFR) - Table of Contents

- Part #: 1910
- Part Title: Occupational Safety & Health Standards
- Subpart: Z
- Subpart Title: Toxic and Hazardous Substances
- Standard #: 1910.1200
- Title: Hazard Communication.
- Appendix: A, B, C, D, E

1910.1200(a)

“Purpose.”

1910.1200(a)(1)

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

..1910.1200(a)(2)

1910.1200(a)(2)

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

1910.1200(b)

“Scope and application.”

1910.1200(b)(1)

This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to

which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for such employers to help them determine their compliance obligations under the rule.)

1910.1200(b)(2)

This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

1910.1200(b)(3)

This section applies to laboratories only as follows:

1910.1200(b)(3)(i)

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

..1910.1200(b)(3)(ii)

1910.1200(b)(3)(ii)

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

1910.1200(b)(3)(iii)

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

1910.1200(b)(3)(iv)

Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f)(1) of this section, and that a material safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

1910.1200(b)(4)

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

1910.1200(b)(4)(i)

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

..1910.1200(b)(4)(ii)

1910.1200(b)(4)(ii)

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

1910.1200(b)(4)(iii)

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

1910.1200(b)(5)

This section does not require labeling of the following chemicals:

1910.1200(b)(5)(i)

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

1910.1200(b)(5)(ii)

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

..1910.1200(b)(5)(iii)

1910.1200(b)(5)(iii)

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

1910.1200(b)(5)(iv)

Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms;

1910.1200(b)(5)(v)

Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal

Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

1910.1200(b)(5)(vi)

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

..1910.1200(b)(6)

1910.1200(b)(6)

This section does not apply to:

1910.1200(b)(6)(i)

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

1910.1200(b)(6)(ii)

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

1910.1200(b)(6)(iii)

Tobacco or tobacco products;

1910.1200(b)(6)(iv)

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

1910.1200(b)(6)(v)

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

1910.1200(b)(6)(vi)

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

..1910.1200(b)(6)(vii)

1910.1200(b)(6)(vii)

Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail

establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

1910.1200(b)(6)(viii)

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

1910.1200(b)(6)(ix)

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

1910.1200(b)(6)(x)

Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

1910.1200(b)(6)(xi)

Ionizing and nonionizing radiation; and,

1910.1200(b)(6)(xii)

Biological hazards.

1910.1200(c)

“Definitions.”

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

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

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

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

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

“Combustible liquid” means any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture

having components with flashpoints of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

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

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

“Compressed gas” means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F (21.1 deg. C); or

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C) regardless of the pressure at 70 deg. F (21.1 deg. C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 deg. C) as determined by ASTM D-323-72.

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

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

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

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

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

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

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

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

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

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

(ii) "Gas, flammable" means: (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

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

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

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

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 deg. F (37.8 deg. C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 deg. F (37.8 deg. C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

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

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

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

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

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

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

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

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

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

"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

"Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

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

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

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

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

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

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

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

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

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

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

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

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

..1910.1200(d)

1910.1200(d)

“Hazard determination.”

1910.1200(d)(1)

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

1910.1200(d)(2)

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

1910.1200(d)(3)

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

1910.1200(d)(3)(i)

29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

..1910.1200(d)(3)(ii)

1910.1200(d)(3)(ii)

“Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment,” American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition). The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

1910.1200(d)(4)

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

1910.1200(d)(4)(i)

National Toxicology Program (NTP), “Annual Report on Carcinogens” (latest edition);

1910.1200(d)(4)(ii)

International Agency for Research on Cancer (IARC) “Monographs” (latest editions); or

1910.1200(d)(4)(iii)

29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

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

1910.1200(d)(5)

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

1910.1200(d)(5)(i)

If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

..1910.1200(d)(5)(ii)

1910.1200(d)(5)(ii)

If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

1910.1200(d)(5)(iii)

If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

1910.1200(d)(5)(iv)

If the chemical manufacturer, importer, or employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard.

1910.1200(d)(6)

Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

..1910.1200(e)

1910.1200(e)

“Written hazard communication program.”

1910.1200(e)(1)

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

1910.1200(e)(1)(i)

A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

1910.1200(e)(1)(ii)

The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

1910.1200(e)(2)

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

1910.1200(e)(2)(i)

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

..1910.1200(e)(2)(ii)

1910.1200(e)(2)(ii)

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

1910.1200(e)(2)(iii)

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

1910.1200(e)(3)

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

1910.1200(e)(4)

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

1910.1200(e)(5)

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

1910.1200(f)

“Labels and other forms of warning.”

1910.1200(f)(1)

The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

..1910.1200(f)(1)(i)

1910.1200(f)(1)(i)

Identity of the hazardous chemical(s);

1910.1200(f)(1)(ii)

Appropriate hazard warnings; and

1910.1200(f)(1)(iii)

Name and address of the chemical manufacturer, importer, or other responsible party.

1910.1200(f)(2)

1910.1200(f)(2)(i)

For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use,

or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;

1910.1200(f)(2)(ii)

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

1910.1200(f)(2)(iii)

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

..1910.1200(f)(3)

1910.1200(f)(3)

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

1910.1200(f)(4)

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

1910.1200(f)(5)

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

1910.1200(f)(5)(i)

Identity of the hazardous chemical(s) contained therein; and,

1910.1200(f)(5)(ii)

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

..1910.1200(f)(6)

1910.1200(f)(6)

The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the

information required by paragraph (f)(5) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

1910.1200(f)(7)

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

1910.1200(f)(8)

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

1910.1200(f)(9)

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

1910.1200(f)(10)

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

..1910.1200(f)(11)

1910.1200(f)(11)

Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within three months of becoming aware of the new information. Labels on containers of hazardous chemicals shipped after that time shall contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importers, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

1910.1200(g)

“Material safety data sheets.”

1910.1200(g)(1)

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

1910.1200(g)(2)

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

1910.1200(g)(2)(i)

The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:

1910.1200(g)(2)(i)(A)

If the hazardous chemical is a single substance, its chemical and common name(s);

1910.1200(g)(2)(i)(B)

If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

1910.1200(g)(2)(i)(C)

If the hazardous chemical is a mixture which has not been tested as a whole:

..1910.1200(g)(2)(i)(C)(1)

1910.1200(g)(2)(i)(C)(1)

The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d) of this section shall be listed if the concentrations are 0.1% or greater; and,

1910.1200(g)(2)(i)(C)(2)

The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees; and,

1910.1200(g)(2)(i)(C)(3)

The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

1910.1200(g)(2)(ii)

Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

1910.1200(g)(2)(iii)

The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

1910.1200(g)(2)(iv)

The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

1910.1200(g)(2)(v)

The primary route(s) of entry;

..1910.1200(g)(2)(vi)

1910.1200(g)(2)(vi)

The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

1910.1200(g)(2)(vii)

Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;

1910.1200(g)(2)(viii)

Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

1910.1200(g)(2)(ix)

Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

1910.1200(g)(2)(x)

Emergency and first aid procedures;

1910.1200(g)(2)(xi)

The date of preparation of the material safety data sheet or the last change to it; and,

..1910.1200(g)(2)(xii)

1910.1200(g)(2)(xii)

The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

1910.1200(g)(3)

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

1910.1200(g)(4)

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

1910.1200(g)(5)

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

..1910.1200(g)(6)

1910.1200(g)(6)

1910.1200(g)(6)(i)

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

1910.1200(g)(6)(ii)

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

1910.1200(g)(6)(iii)

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

1910.1200(g)(6)(iv)

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

1910.1200(g)(7)

1910.1200(g)(7)(i)

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

1910.1200(g)(7)(ii)

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

..1910.1200(g)(7)(iii)

1910.1200(g)(7)(iii)

Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a material safety data sheet to such

employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available;

1910.1200(g)(7)(iv)

Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide material safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a material safety data sheet is available;

1910.1200(g)(7)(v)

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

1910.1200(g)(7)(vi)

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

1910.1200(g)(7)(vii)

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

..1910.1200(g)(8)

1910.1200(g)(8)

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

1910.1200(g)(9)

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

1910.1200(g)(10)

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

1910.1200(g)(11)

Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.1020(e). The Director shall also be given access to material safety data sheets in the same manner.

..1910.1200(h)

1910.1200(h)

“Employee information and training.”

1910.1200(h)(1)

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

1910.1200(h)(2)

“Information.” Employees shall be informed of:

1910.1200(h)(2)(i)

The requirements of this section;

1910.1200(h)(2)(ii)

Any operations in their work area where hazardous chemicals are present; and,

1910.1200(h)(2)(iii)

The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

1910.1200(h)(3)

“Training.” Employee training shall include at least:

1910.1200(h)(3)(i)

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

1910.1200(h)(3)(ii)

The physical and health hazards of the chemicals in the work area;

..1910.1200(h)(3)(iii)

1910.1200(h)(3)(iii)

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

1910.1200(h)(3)(iv)

The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

1910.1200(i)

“Trade secrets.”

1910.1200(i)(1)

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

1910.1200(i)(1)(i)

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

1910.1200(i)(1)(ii)

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

1910.1200(i)(1)(iii)

The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

1910.1200(i)(1)(iv)

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

..1910.1200(i)(2)

1910.1200(i)(2)

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

1910.1200(i)(3)

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

1910.1200(i)(3)(i)

The request is in writing;	Methods of diagnosing and treating harmful exposures to the chemical;
1910.1200(i)(3)(ii)	1910.1200(i)(3)(iv)
The request describes with reasonable detail one or more of the following occupational health needs for the information:	The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,
1910.1200(i)(3)(ii)(A)	..1910.1200(i)(3)(v)
To assess the hazards of the chemicals to which employees will be exposed;	1910.1200(i)(3)(v)
1910.1200(i)(3)(ii)(B)	The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.
To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;	1910.1200(i)(4)
1910.1200(i)(3)(ii)(C)	The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:
To conduct pre-assignment or periodic medical surveillance of exposed employees;	1910.1200(i)(4)(i)
1910.1200(i)(3)(ii)(D)	May restrict the use of the information to the health purposes indicated in the written statement of need;
To provide medical treatment to exposed employees;	1910.1200(i)(4)(ii)
..1910.1200(i)(3)(ii)(E)	May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,
1910.1200(i)(3)(ii)(E)	1910.1200(i)(4)(iii)
To select or assess appropriate personal protective equipment for exposed employees;	May not include requirements for the posting of a penalty bond.
1910.1200(i)(3)(ii)(F)	1910.1200(i)(5)
To design or assess engineering controls or other protective measures for exposed employees; and,	Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.
1910.1200(i)(3)(ii)(G)	1910.1200(i)(6)
To conduct studies to determine the health effects of exposure.	If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.
1910.1200(i)(3)(iii)	..1910.1200(i)(7)
The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this section:	1910.1200(i)(7)
1910.1200(i)(3)(iii)(A)	If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:
The properties and effects of the chemical;	1910.1200(i)(7)(i)
1910.1200(i)(3)(iii)(B)	Be provided to the health professional, employee, or designated representative, within thirty days of the request;
Measures for controlling workers' exposure to the chemical;	
1910.1200(i)(3)(iii)(C)	
Methods of monitoring and analyzing worker exposure to the chemical; and,	
1910.1200(i)(3)(iii)(D)	

1910.1200(i)(7)(ii)

Be in writing;

1910.1200(i)(7)(iii)

Include evidence to support the claim that the specific chemical identity is a trade secret;

1910.1200(i)(7)(iv)

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

1910.1200(i)(7)(v)

Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

1910.1200(i)(8)

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

1910.1200(i)(9)

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

..1910.1200(i)(9)(i)

1910.1200(i)(9)(i)

The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

1910.1200(i)(9)(ii)

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

1910.1200(i)(9)(iii)

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

1910.1200(i)(10)

1910.1200(i)(10)(i)

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

..1910.1200(i)(10)(ii)

1910.1200(i)(10)(ii)

If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

1910.1200(i)(11)

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

1910.1200(i)(12)

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

1910.1200(i)(13)

Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

..1910.1200(j)

1910.1200(j)

"Effective dates." Chemical manufacturers, importers, distributors, and employers shall be in compliance with all provisions of this section by March 11, 1994.

Note: The effective date of the clarification that the exemption of wood and wood products from the Hazard Communication standard in paragraph (b)(6)(iv) only applies to wood and wood products including lumber which will not be processed, where the manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility, and that the exemption does not apply to wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut generating dust has been stayed from March 11, 1994 to August 11, 1994.

[59 FR 17479, April 13, 1994; 59 FR 65947, Dec. 22, 1994; 61 FR 5507, Feb. 13, 1996]

## Appendix B – Hazard Communication Contractor Requirements

<b>HAZARD COMMUNICATION Contractor Requirements</b>	
<b>SUMMARY</b>	<p>The Contractor is required to develop, implement and maintain a Hazard Communication Program in order to protect employees who may use or be exposed to hazardous substances during the course of construction activity. The Contractor's Hazard Communication Program will define responsibilities for the following activities:</p> <ul style="list-style-type: none"> <li>• Maintaining a written Hazard Communication plan;</li> <li>• Maintaining a current inventory of hazardous chemicals at the work site;</li> <li>• Maintaining a current Material Safety Data Sheet (MSDS) for each hazardous chemical or chemical compound at the work site;</li> <li>• Labeling chemical containers properly; and,</li> <li>• Training employees.</li> </ul>
<b>RELATED SECTIONS</b>	<p><i>Storage of Flammable and Combustible Materials</i>  <i>Hazardous Waste Management</i>  <i>Asbestos Abatement</i>  <i>Lead-Based Paint: Abatement for Renovation/Demolition Work</i>  <i>Lead-Based Paint: Abatement for Residential Compliance</i>  <i>Lead-Based Paint: General Debris</i>  <i>Personal Protective Equipment</i></p>
<b>REGULATIONS</b>	<p>29 CFR 1910.1200                  29 CFR 1926.59</p>
<b>APPLICABILITY</b>	<p>If the Contractor's activities involve the use and/or storage of hazardous chemicals, then the compliance items listed below should be verified during the duration of work.</p>
<b>CONTRACT SPECIFICATIONS</b>	<p>The requirements for a Hazard Communication Program are specified in all University contracts.</p>

## Appendix C – Hazard Communication Contractor Checklist

The following checklist should be provided to Contractors as a general guidance. This form should also be used by UNH Project Managers to assess the contractor's requirements associated with the Hazard Communication Program and filed with contract documentation.

<b>HAZARD COMMUNICATION Contractor Requirements</b>			
<b>COMPLIANCE ITEMS</b>	<b>YES</b>	<b>NO</b>	
The Contractor has a written Hazard Communication Plan. This plan specifically identifies the Contractor's employee(s) who is/are responsible for maintenance and implementation of the plan during activities at the University.			
The Contractor has trained employees potentially exposed to hazardous chemicals in accordance with regulatory requirements and is responsible to maintain all training records.			
The Contractor has labeled all chemical containers and secondary containers at the construction site with the following information: the name of hazardous chemical(s); appropriate hazard warnings; and, the name and address of the manufacturer.			
The Contractor has submitted an inventory of all on-site hazardous chemicals with accompanying MSDS to the responsible University Operations Services Supervisor. The Contractor is also maintaining full MSDS in an accessible location at the work site.			
UNH has provided training on the hazards associated with the Contractor's chemical inventory, and on the availability of MSDS to any University employee who will be required to conduct site visits/inspections.			
The Contractor is providing appropriate PPE and equipment as appropriate to hazards			
The Contractor is storing product properly to minimize hazards and removing excess product from the work-site in accordance with Federal and State regulations and UNH requirements.			
<b>Audit performed by:</b> _____		<b>Date:</b> _____	

## Appendix D – Material Safety Data Sheets

The objective of a Material Safety Data Sheet (MSDS) is to concisely inform you about the hazards of the materials you work with so that you can protect yourself and respond to emergency situations. The law states that you must have access to MSDS and be taught to read and understand them. Information on an MSDS is the summarization of facts from many sources. Training, knowledge, and understanding of the technical data on an MSDS will provide you with the skills, wisdom, and good judgment to safely deal with your occupational exposure to hazards. It will take some study to learn what an MSDS says. The real challenge, however, is to learn what an MSDS means.

Information on an MSDS will include:

- The material's physical properties or fast-acting health effects that make it dangerous to handle.
- The level of protective gear you need.
- The first aid treatment to be provided when you are exposed to a hazard.
- The preplanning needed for safely handling spills, fires, and day-to-day operations.
- How to respond to accidents and releases once they occur.

Understanding how to interpret the data on the MSDS is your best defense against accidents and injuries. Knowing what data an MSDS should include, as well as where it's included, will help you find it more quickly. Below are descriptions of the sixteen sections of an MSDS according the ANSI standard and notes that will help you find and interpret the information on a typical good-quality MSDS.

A typical MSDS will have sixteen sections:

- Section 1. Chemical Product & Company Information**
- Section 2. Composition / Information on Ingredients**
- Section 3. Hazards Identification**
- 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 Instability**
- Section 11. Toxicological Information**
- Section 12. Ecological Information**
- Section 13. Disposal Considerations**
- Section 14. Transport Information**
- Section 15. Regulatory Information**
- Section 16. Other Information**

The following pages describe each of the sections and the important information in each.

## Section 1: Chemical Product & Company Information

**Information in this section:** Section 1 provides the name, address, and phone number of the company that produced the material, the MSDS date of issue (or most recent revision), and the name of the material. The name of the material on the MSDS must be spelled exactly as it is on the container you received. If it is not, inform your supervisor. You may not have the right MSDS.

**Why this information is important:** Thousands of materials with many similar names are found in workplaces. A mistake on the supplier's part in sending you the wrong sheet needs to be caught immediately, before you put your trust in the wrong information. In addition, having the supplier's phone number on the sheet can be a vital time-saver in the event of an accident involving the material or for requesting additional data.

<b>Material Safety Data Sheet</b>			
<b>MSDS</b>	May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.	Chemical Name:  Date of Preparation:	MSDS No.  <b>Revision #</b>

<b>Section 1 – Chemical Product and Company Identification</b>	
<i>Product / Chemical Name (as used on Label and List):</i> <i>Manufacturer's Name:</i> <i>Address</i> <i>Chemical Formula:</i> <i>CAS Number:</i> <i>Synonyms:</i> <i>Derivation:</i> <i>General Use:</i> <i>Vendors:</i>	<i>Emergency Telephone Number:</i>  <i>Telephone Number for Information</i>  <i>Date Prepared</i>

## Section 2: Composition / Information on Ingredients

**Information in this section:** Section 2 lists the product's individual hazardous chemicals and their relative percentages. The material's corresponding CAS (Chemical Abstract Service) No.(s) must also be listed. All ingredients that meet the OSHA *Hazard Communication* standard criteria of a hazardous ingredient must be identified here. If established, the chemical's exposure limits are shown. For example, the phrase "8-hr TWA" is a guideline establishing an exposure level that should not be exceeded when averaged over an eight-hour workday. Exposure information may also be found in Section 8.

**Why this information is important:** Exposure to certain hazardous materials may be acceptable, but only for periods of time not to exceed certain limits and at concentrations of the material no greater than certain limits. You learn these limits from the MSDS. Should your job involve exposure for greater periods of time or at higher concentrations, you will know that wearing protective clothing or taking other protective measures as described on the MSDS is vital to your health.

<b>Section 2 – Composition / Information on Ingredients</b>				
<i>Hazardous Components [Specific Chemical Identity; Common Name(s):]</i>	<i>OSHA PEL</i>	<i>ACGIH TLV</i>	<i>Other Limits Recommended</i>	<i>% (optional)</i>

### Section 3: Hazards Identification


**Information in this section:** Section 3 is divided into two parts.

The first part describes the material's appearance and gives an overview of the most significant immediate concerns for emergency personnel. If a material is considered a confirmed or probably carcinogen by IARC, NTP, or OSHA, a dermatogen, a mutagen, toxic to aquatic life or a danger to the environment, this may also be included in the emergency overview. (Note: this information may also be found in Section 2, 15, or 16)

The second part of Section 3 provides information on the potential adverse health effects and symptoms associated with exposure to the material, its components, or known by-products. You can be exposed to a harmful chemical through several routes of entry into your body, including eye contact, skin contact, inhalation and ingestion (swallowing). Section 3 of the MSDS must list all the routes of entry pertinent to this material and the potential health effects of each. This information includes:

- **ROUTES OF ENTRY** – how chemicals may enter the body (inhalation, absorption through skin, ingestion, etc.).
- **ACUTE EXPOSURE** – symptoms come on rapidly after short term exposure.
- **CHRONIC EXPOSURE** – causes damage after long-term exposure.
- **SIGNS AND SYMPTOMS OF EXPOSURE** – symptoms of acute exposure such as headache, rash, nausea, eye and throat irritation, skin burns, lung irritation, etc.
- **MEDICAL CONDITIONS** – symptoms or conditions generally aggravated by exposure to the chemical.

**Why this information is important:** Sickness and even death from improper exposure to certain materials can be prevented if you are aware of the potential hazards ahead of time. Chronic effects are particularly dangerous because you may not experience discomfort in the presence of the material, but you may develop severe health problems later in life as a result of your exposure. Some materials harm a particular organ of the body, and such “target organs” (heart, liver, lungs, kidneys, etc.) will be listed.

<b>Section 3 – Hazards Identification</b>	
<i>★ Emergency Overview ★</i>	
 <b>NFPA</b>	
<b>Potential Health Effects</b>	
<i>Primary Entry Routes:</i> <i>Target Organs:</i> <i>Acute Effects:</i> <i>Inhalation</i> <i>Eye:</i> <i>Skin:</i> <i>Ingestion:</i>	<i>Carcinogenicity:</i> <i>Medical Conditions Aggravated by long-term exposure:</i> <i>Chronic Effects:</i>

## Section 4: First Aid Measures

**Information in this section:** Section 4 describes medical and first aid treatments for accidental exposure. Any known antidotes that may be administered by a lay person or specially trained personnel will be indicated.

**Why this information is important:** Professional medical treatment should be obtained as soon as possible after an accident. Actions taken in the first few minutes after an exposure can make the difference between a minor and major injury. For example, if you splash battery acid in your eyes, the more quickly you begin washing out your eyes with water, the more likely you are to save your eyesight. You should know the first aid measures for a material before you work with it.

Section 4 – First Aid Measures
<p><i>Inhalation:</i></p> <p><i>Eye Contact:</i></p> <p><i>Skin Contact:</i></p> <p><i>Ingestion:</i></p> <p><i>Note to Physician:</i></p>

## Section 5: Fire Fighting Measures

**Information in this section:** Section 5 provides basic fire fighting guidance for trained fire fighters, emergency responders, employees, and occupational health and safety professionals. It describes the fire and explosive properties of the material, the proper extinguishing materials, and the precautions and procedures to safety and effectively combat the fire. Examples include:

- **FLASHPOINT** – the lowest temperature at which a flammable liquid gives off enough vapor to form an ignitable mixture with air. At a glance you can tell from a low flash point that a material represents a fire hazard. For example, the flash point of gasoline is -43 deg C (-45 deg F).
- **AUTOIGNITION TEMPERATURE** – tells you how hot a material must be before it will set itself on fire without a flame or spark.
- **FLAMMABLE LIMITS** – the minimum and maximum concentrations of vapors required to prevent a fire. Generally concentrations are greater than the LEL but less than the UEL.
- **LEL (Lower Explosive Limit)** – the lowest concentration at which a chemical’s vapors will cause an explosion. Concentrations below the LEL are considered “too lean” and generally will not burn.
- **UEL (Upper Explosive Limit)** – the maximum concentration at which a chemical’s vapor will cause an explosion. Concentrations greater than the UEL are considered “too rich” and generally will not burn.
- **EXTINGUISHING MEDIA** – an extinguishing material (water, foam, fog, carbon dioxide, dry chemical, etc.).
- **SPECIAL FIRE FIGHTING PROCEDURES** – special procedures, equipment or safeguards that are recommended during fire fighting.
- **UNUSUAL FIRE AND EXPLOSION HAZARDS** – any special conditions or precautions concerning fire and explosion that are unique to the chemical.

**Why this information is important:** The flammable properties combined with the physical and chemical properties in Section 9 give you a good indication of how hazardous a material is in a fire situation. Knowing this information, before fighting a fire, helps with preplanned response procedures and equipment. When there is a fire, and time is scarce, you want to know the best way to safety and how to quickly extinguish the fire. While extinguishing the fire, be aware of any reactivity hazards that enhance the fire and explosion potential. Section 5 will explain when a material is explosive and if there are any unusual fire hazards.

<b>Section 5 – Fire-Fighting Measures</b>	
<i>Flash Point:</i> <i>Flash Point Method:</i> <i>Burning Rate:</i> <i>Autoignition Temperature:</i> <i>LEL:</i> <i>UEL</i>	<i>Flammability Classification:</i> <i>Extinguishing Media:</i> <i>Unusual Fire or Explosion Hazards:</i> <i>Hazardous Combustion Products:</i> <i>Fire-Fighting Instructions:</i> <i>Fire-Fighting Equipment:</i>

## Section 6: Accidental Release Measures

**Information in this section:** Section 6 provides spill, leak, and response procedures for emergency responders and environmental professionals. It describes evacuation procedures, containment and cleanup techniques, and other emergency advice to protect the health and safety of the responders as well as the environment.

**Why this information is important:** The knowledge presented enables you to preplan for emergency response, train staff, and place necessary equipment in the work area to quickly contain and clean up a spill or leak. Proper containment and cleanup techniques minimize the adverse effects that can occur from an accidental release. Proper cleanup procedures for flammable materials include the use of non-sparking tools, equipment and noncombustible absorbent materials and complete decontamination techniques after cleanup to remove any flammable residues.

### Section 6 – Accidental Release Measures

*Spill / Leak Procedures:*

*Small Spills:*

*Large Spills:*

*Containment:*

*Cleanup:*

*Regulatory Requirements:*

## Section 7: Handling and Storage

**Information in this section:** Section 7 provides safe handling and storage information for employees, occupational health and safety professionals, and employers. General handling precautions and practices are described to prevent release to the environment, overexposure during contact with the material, and continued contact after handling. Also explained are the necessary storage conditions to avoid damage to containers, contact with incompatible materials and subsequent dangerous reactions, evaporation or decomposition of the stored materials, or flammable and explosive atmospheres in the storage area. In addition it covers:

- Steps to be taken in case material is released or spilled.
- Waste disposal method/special precautions.
- Precautions to be taken in handling and storage.
- Equipment and procedures to be followed.

**Why this information is important:** Stored containers cannot be assumed to be safe: Containers corrode and lids leak. Sparks or heat can cause fires or explosions. Storing incompatible materials close together can cause dangerous reactions. Knowing how to safely handle materials and prevent unsafe storage conditions protects you from potential hazards.

Section 7 – Handling and Storage
<p><i>Handling Precautions:</i></p> <p><i>Storage Requirements:</i></p> <p><i>Regulatory Requirements:</i></p>

## Section 8: Exposure Controls / Personal Protection

**Information in this section:** Section 8 discusses methods intended for occupational health and safety professionals and employers for reducing worker exposure to hazardous materials. Exposure controls include engineering controls such as ventilation and special process conditions (e.g. training, labeling, warning devices.).

The types of protection that may be required include:

- Type of respiratory protection.
- Ventilation to be used – local exhaust, mechanical (general), etc.
- Protective gloves to be used.
- Eye protection recommendations.
- Other protective clothing or equipment.
- Work and hygienic practices.

PPE recommendations are given for anticipated normal use and emergency response during a fire, spill, leak or accidental release.

**Why this information is important:** When your job responsibility includes working directly with a hazardous material, this section of the MSDS tells you what controls should be in place to safeguard your health. If the MSDS states that exposure should not exceed a certain exposure limit (i.e. OSHA PEL) or gloves are needed to prevent skin absorption, your employer should provide the necessary controls (e.g. ventilation) and PPE to ensure safe work conditions. However, it is your responsibility to use the PPE provided. To reduce exposure, engineering controls in the workplace are superior to personal protective equipment. Sometimes a combination is necessary to reduce overall exposure. A trained professional, such as an industrial hygienist or a safety engineer, should determine how to most effectively minimize hazards through exposure controls.

### Section 8 – Exposure Controls / Personal Protection

*Engineering Controls:*

*Ventilation:*

*Administrative Controls:*

*Respiratory Protection:*

*Protective Clothing / Equipment:*

*Safety Stations:*

*Contaminated Equipment:*

*Comments:*

## Section 9: Physical and Chemical Properties

**Information in this section:** Section 9 describes the physical characteristics of the chemical. For example, the MSDS can tell you about the chemical's:

- **BOILING POINT** – a low boiling point indicates a special fire hazard for flammable liquids.
- **VAPOR PRESSURE** – the higher the pressure, the greater the chance of inhaling the vapor.
- **VAPOR DENSITY** – vapors heavier than air can accumulate in low places (sewers, floors, tank bottoms) creating dangerous situations.
- **SOLUBILITY IN WATER** – this can help determine the fire and health hazards of the chemical.
- **APPEARANCE AND ODOR** – the look and smell of the chemical.
- **SPECIFIC GRAVITY** – whether the chemical will sink or float in water.
- **MELTING POINT** – at what temperature, if solid, the chemical will turn into a liquid state.
- **EVAPORATION RATE** – how quickly the chemical will evaporate under normal conditions.

**Why this information is important:** Safe handling and use is ensured when you know how a material will behave at different temperatures or when it is exposed to other chemicals. Physical properties can help predict how the material will react. This is helpful in determining safe handling procedures and selecting appropriate personal protective equipment.

<b>Section 9 – Physical and Chemical Properties</b>	
<i>Physical State:</i>	<i>Water Solubility:</i>
<i>Appearance and Odor:</i>	<i>Other Solubilities:</i>
<i>Odor Threshold:</i>	<i>Boiling Point:</i>
<i>Vapor Pressure:</i>	<i>Freezing Point:</i>
<i>Saturated Vapor Density (Air=120 kg/m<sup>3</sup>, 0.075 lb/ft<sup>3</sup>):</i>	<i>Viscosity:</i>
<i>Formula Weight:</i>	<i>Refractive Index:</i>
<i>Specific Gravity (H<sub>2</sub>O=1, at 4 deg C):</i>	<i>Surface Tension:</i>
<i>Octanol/Water Partition Coefficient:</i>	<i>% Volatile:</i>
<i>Henry's Law Constant (H):</i>	<i>Evaporation Rate (n-BuAc=1):</i>
	<i>Ionization Potential:</i>

## Section 10: Stability and Instability

**Information in this section:** The information in Section 10 lists materials and circumstances that could be hazardous when combined with the material covered by the MSDS. There are many different ways that materials may react with one another. This section provides information on chemical incompatibilities, conditions to avoid, decomposition products, and the material's stability. Section 10 highlights information on what may cause dangerous reactions. For example:

- **STABILITY** – how likely a chemical will decompose, creating a dangerous situation. If the material is unstable, the MSDS lists the conditions that would create a hazardous product.
- **INCOMPATIBILITY** – lists the materials to avoid preventing a hazardous reaction. (i.e. acids, bases).
- **HAZARDOUS DECOMPOSITION OR BYPRODUCTS** – conditions and materials that can cause a chemical to break down and become a hazard or what may be produced when the chemical reacts with other substances. These include temperature extremes, ignition sources, and other chemicals. Sometimes, the product of a reaction is far more hazardous than the chemical itself.
- **HAZARDOUS POLYMERIZATION** – large amounts of energy may be released when two or smaller molecules combine. If this is a danger, the MSDS lists the conditions that can lead to it.

**Why this information is important:** Store and handle the material more carefully when there are changes in temperature or when it come into contact with other materials. The information in this section will guide you in your choice of materials for containers, shelving and PPE. Some materials may react with common materials, burn, or spontaneously decompose to yield by-products that are more toxic than the starting materials themselves.

### Section 10 – Stability and Instability

*Stability:*

*Polymerization:*

*Chemical Incompatibilities:*

*Conditions to Avoid:*

*Hazardous Decomposition Products:*

## Section 11: Toxicological Information

**Information in this section:** Section 11 provides information on toxicity testing of the material and/or its components. Generally, the information reflects animal testing, although some human data will be available if accidental human poisoning has occurred and the exposure amounts are known. The information in this section is intended for medical professionals, occupational health and safety professionals and toxicologists.

**Why this information is important:** Toxicological data is invaluable in evaluating the potential health risks that a material may pose to exposed workers. Human evidence of health effects in exposed populations is often not available for the majority of chemicals used or produced in the workplace. Therefore, professionals must rely on toxicological animal data in order to predict the health effects that might occur in humans.

Section 11 – Toxicological Information	
<i>Acute Effects:</i>	<i>Multiple Dose Toxicity Data:</i>
<i>Acute Inhalation Effects:</i>	
<i>*See NIOSH, RTECS for additional toxicity data</i>	

## Section 12: Ecological Information

**Information in this section:** Section 12 will assist in evaluating the effect a chemical may have if it is released to the environment. It may also be useful in evaluating waste treatment practices. Ecotoxicity data may include information about acute and long-term toxicity to fish and invertebrates, or plant and microorganism toxicity. Chemical behavior in the air, soil or water is important data when evaluating environmental contamination. Such information could include persistence and degradation, soil mobility, bioaccumulation, and photolytic stability.

**Why this information is important:** Ecological information can be crucial in the event of a major spill or when determining whether or not a chemical can be safely disposed in a landfill. If a chemical is rapidly mobile in soil then it is not a good candidate for landfill disposal because it could potentially leach into groundwater. If spills occur in water, knowing ecotoxicity data and the material's behavior in water can help determine if the spill poses a threat to fish and the best cleanup approach to avoid further environmental contamination.

Section 12 – Ecological Information
<i>Ecotoxicity:</i>
<i>Environmental Fate:</i>
<i>Environmental Degradation:</i>
<i>Soil Absorption / Mobility:</i>

### **Section 13: Disposal Considerations**

**Information in this section:** Section 13 provides proper disposal information for environmental professionals or individuals responsible for waste management activities. Information may include special disposal methods or limitations per federal, state, or local regulations, and waste management options, such as recycling or reclamation. It may also include RCRA waste classifications and EPA waste identification numbers and descriptions.

**Why this information is important:** Section 13 will assist in determining the proper disposal methods and thereby prevent environmental damage, public health hazards, violations of laws and regulations and hefty fines.

<b>Section 13 – Disposal Considerations</b>
<i>Disposal:</i>

## Section 14: Transport Information

**Information in this section:** Section 14 provides shipping classification information for the employer, distributor, emergency responders, and transport/shipping departments. If regulated, shipping information includes U.S. Department of Transportation (DOT) hazardous materials description/proper shipping name, hazard class and identification numbers (UN or NA numbers).

**Why this information is important:** Section 14 will help transporting/shipping departments properly prepare materials for shipment and generate the accompanying documentation. Improperly packaged materials could result in a hazardous exposure or dangerous reaction during handling and transport. Knowing the DOT hazard class and identification numbers enables you to recognize the potential hazards associated with a material.

<b>Section 14 – Transport Information</b>		
<i>Shipping Name:</i> <i>Shipping Symbols:</i> <i>Hazard Class:</i> <i>ID No:</i> <i>Packing Group:</i> <i>Label:</i> <i>Special Provisions (172.102):</i>	<i>DOT Transportation Data (49 CFR 172.101)</i>  <i>Packaging Authorizations</i> <i>a) Exceptions:</i> <i>b) Non-bulk Packaging:</i> <i>c) Bulk Packaging:</i>	<i>Quantity Limitations:</i> <i>a) Passenger Aircraft, or Railcar:</i> <i>b) Cargo Aircraft Only:</i>  <i>Vessel Stowage Requirements</i> <i>a) Vessel Stowage</i> <i>b) Other</i>

## Section 15: Regulatory Information

**Information in this section:** Section 15 provides regulatory information for employers and regulatory compliance personnel. U.S. federal regulations such as OSHA, TSCA, SARA, CERCLA and CWA are addressed. Reportable quantities (RQ) for spills, discharges, and threshold planning quantities (TPQ) for hazardous materials stored at facilities are listed. Section 15 may also include international regulatory information which is helpful to those exporting materials outside the U.S.

**Why this information is important:** Section 15 provides information which will be helpful in the compliance with the various federal, state and international regulatory requirements.

<b>Section 15 – Regulatory Information</b>	
<i>EPA Regulations:</i>	
	<i>Toxic/Flammable Substance Subject to Accidental Release Prevention (40 CFR 68.130):</i> <i>RCRA Hazardous Waste Number (40 CFR 261.33):</i> <i>Classified as a RCRA Hazardous Waste (40 CFR 261.21):</i> <i>CERCLA Hazardous Substance (40 CFR 302.4):</i> <i>CERCLA Reportable Quantity (RQ):</i> <i>SARA 311/312 Codes:</i> <i>SARA Toxic Chemical (40 CFR 372.65):</i>
<i>SRA EHS (Extremely Hazardous Substance) (40 CFR 355):</i> <i>OSHA Regulations:</i>	

## Section 16: Other Information

**Information in this section:** Section 16 provides a location for additional information, such a list of references, keys/legends, or preparation and revision indicators. Hazard ratings defining the acute health, flammability, and instability hazards of a material may also be included.

**Why this information is important:** Section 16 allows flexibility for additional information and ensures a complete MSDS. Hazard rating systems in this section provide a simple, recognizable, and easily understood reference to evaluate a material's hazards.

### Section 16 – Other Information

*References:*

*Prepared by:*  
*Industrial Hygiene Review:*  
*Medical Review*

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## Appendix E – MSDS Requests

# Fax

<b>To:</b>	<b>From:</b>
<b>Fax:</b>	<b>Pages:</b>
<b>Phone:</b>	<b>Date:</b>
<b>Re:</b> <i>MSDS Request</i>	<b>CC:</b>

Attention: Safety Officer / Product Safety

The University of New Hampshire is currently performing a review of their chemical inventories and Material Safety Data Sheets (MSDS) catalog. Currently, for the chemicals or products listed below, we either have a missing MSDS or one that is out of date. Could you please mail a legible copy of the most recent MSDS for the following products to the address below for our records?

- Product 1
- Product 2
- Product 3
- Product 4
- Product 5
- Product 6

Copies or electronic versions can be mailed to the following address.

University of New Hampshire  
[Requestor's Name]  
[Department]  
[Street Address]  
[City, State, Zip]

Thank you in advance for your timely response.

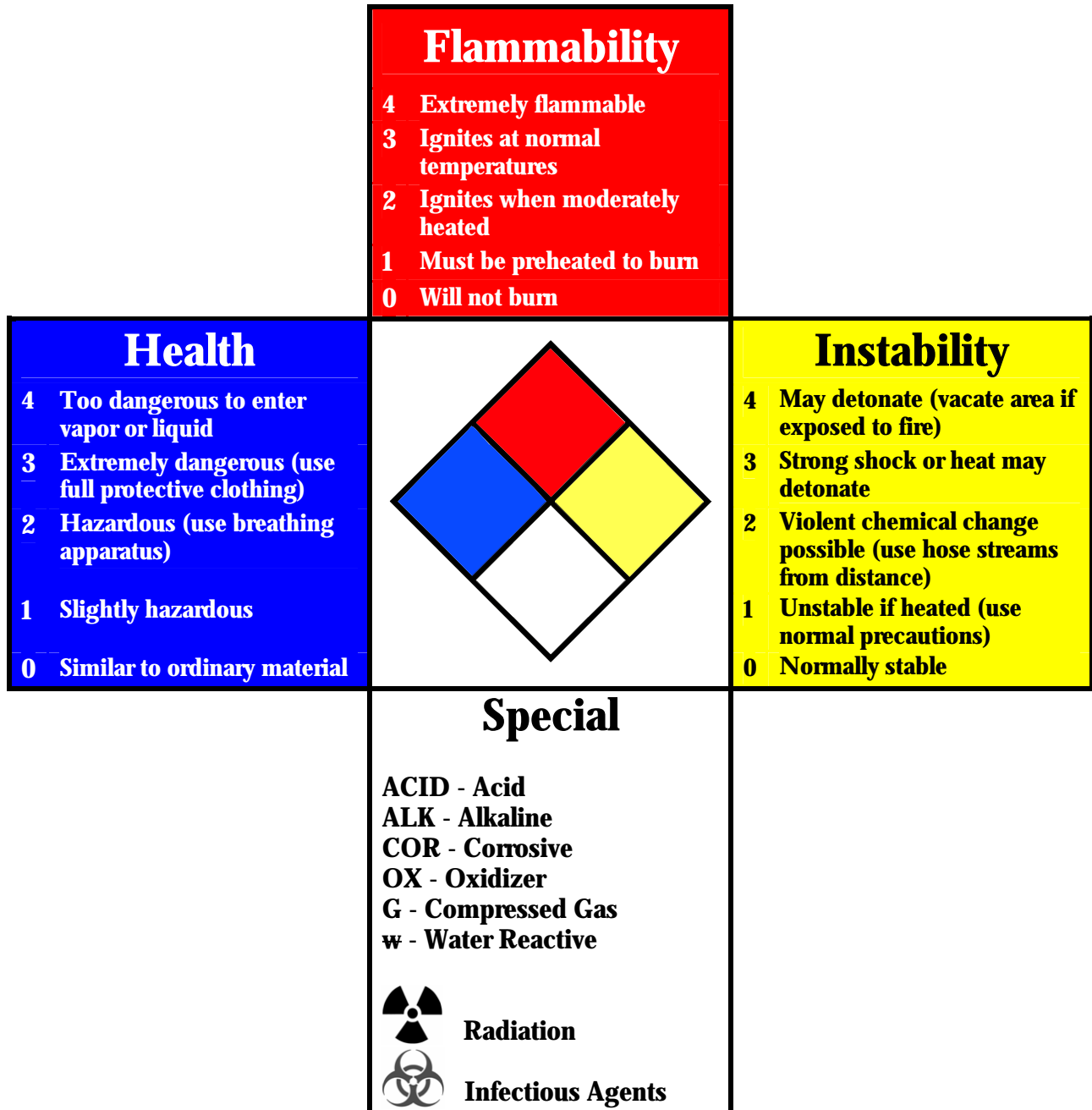
Sincerely,

[Requestor's Name]

## Appendix F – Labeling

### NFPA Labels and Signs

The National Fire and Protection Association (NFPA) has developed a numerical system for the identification of fire hazards posed by various materials. NFPA labels and signs are designed to delineate health hazards, flammability and instability of storage areas and materials.



## HMIS System

The Hazardous Materials Identification System (HMIS) is an alternative way to delineate hazards by numerical system. HMIS labels are frequently found on containers and vessels.

<b>Chemical Name:</b>	
<b>CAS Number:</b>	
<b>HEALTH</b>	<input type="checkbox"/>
<b>FLAMMABILITY</b>	<input type="checkbox"/>
<b>INSTABILITY</b>	<input type="checkbox"/>
<b>SPECIFIC</b>	<input type="checkbox"/>

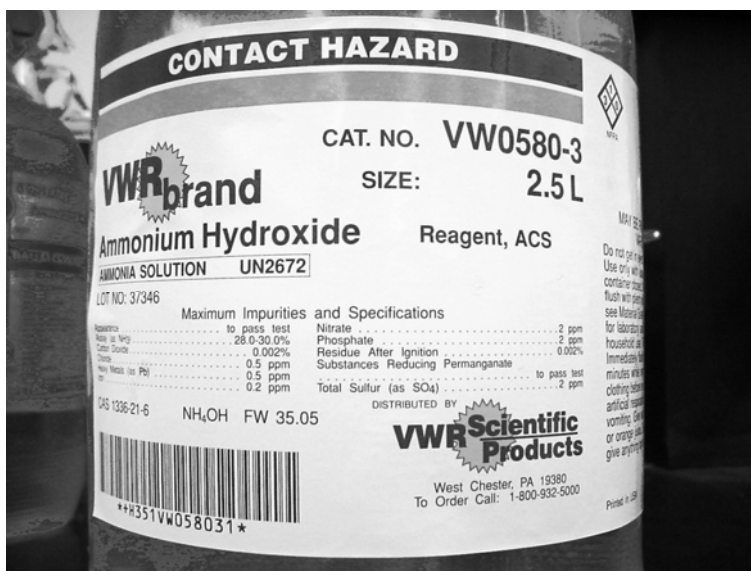
<b>HEALTH</b>	<input type="checkbox"/>
<b>4 - Deadly</b> <b>3 - Extreme Danger</b> <b>2 - Dangerous</b> <b>1 - Slight Hazard</b> <b>0 - No Hazard</b>	

<b>FLAMMABILITY</b>	<input type="checkbox"/>
<b>4 - Flash Point below 73 °F and Boiling Point Below 100 °F</b> <b>3 - Flash Point Below 100 °F</b> <b>2 - Flash Point Below 200 °F</b> <b>1 - Flash Point Above 200 °F</b> <b>0 - Will Not Burn</b>	

<b>INSTABILITY</b>	<input type="checkbox"/>
<b>4 - May Detonate</b> <b>3 - Explosive</b> <b>2 - Unstable</b> <b>1 - Normally Stable</b> <b>0 - Stable</b>	

## Container Labeling

Some products will have labels which describe the chemical name, CAS number, major hazards, and exposure routes. First aid measures and health effects are also included.



## Personal Protective Equipment Requirement

In addition to chemical product name, hazard identification and exposure routes, some containers or areas may contain PPE recommendations. Below are some examples of the icons used to delineate PPE:



## Hazardous Waste Labels

Proper disposal and storage requirements are applicable for all hazardous waste materials. Refer to the UNH Hazardous Waste Program for details on labeling requirements.

Environmental Health and Safety • Perpetuity Hall • UNH • Durham, NH  
Telephone (603) 862-3526 • 862-0683 • 862-4041

**HAZARDOUS WASTE**  
**FEDERAL LAW PROHIBITS IMPROPER DISPOSAL**

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Start Date: \_\_\_\_\_ Filled Date: \_\_\_\_\_

To comply with EPA law, EH&S must receive this container **immediately** after it is filled. Call 2-3526 for hazardous waste removal.

Generator: \_\_\_\_\_

Dept: \_\_\_\_\_ Bldg: \_\_\_\_\_ Room: \_\_\_\_\_

----- **For EH&S Use Only** -----

Log #: (EH&S)	EPA Hazardous Waste Code:	Weight: (kg)
------------------	------------------------------	-----------------

**Directions for Labeling Hazardous Waste**

A container holding **ANY** quantity of Hazardous Waste **MUST** be labeled **IMMEDIATELY**.

**Description** – All waste constituents and concentrations based on the generators knowledge of the waste. No abbreviations. No formulas. Example – Acetonitrile 60%, Hexanesulfonic Acid 30%, Water 10%

**Start Date** – M/D/Y-Dated immediately upon adding the first quantity of waste to a container.

**Filled Date** – M/D/Y-Date immediately when the container is full **OR** no longer needed. After assigning a filled date, contact EH&S for container pickup.

**Generator** – Name of Principal Investigator **AND** name of person actually producing the waste. (Example – A. Smith/B. Jones)

**Dept.** – UNH Academic, Research or Support Dept.

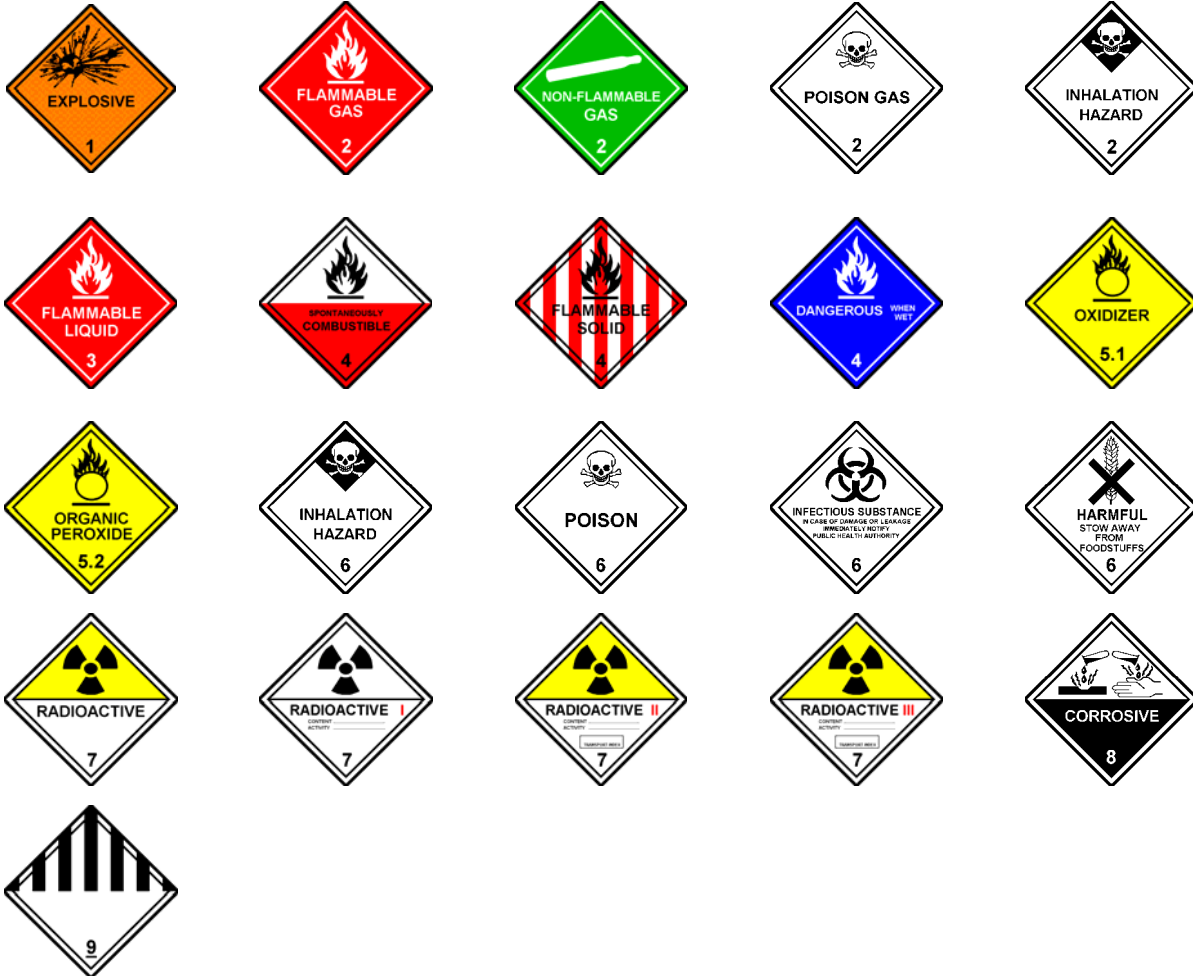
**Bldg.** – UNH Building name

**Room** – Room number where the waste container is stored.

Log#, EPA Hazardous Waste Code and Weight are for EH&S use.  
Please call EH&S at 2-3526 with any questions regarding Hazardous Waste Management.

## Department of Transportation (DOT) Labels and Placards

DOT uses a hazard classification system for the labeling of shipments containing chemicals or vehicles transporting chemicals. Below are some examples of placards and labels:





## **Appendix H – Overview of the Hazard Communication Training Requirements**

### ***General***

The Hazard Communication Standard is a very broad requirement and covers virtually any place of employment where chemicals are used. Failure to comply with the Hazard Communication Standard is the most frequent citation issued by OSHA.

The Standard mandates that employers:

- Develop a written Hazard Communication plan (including a training plan) and
- Train employees in the chemical hazards of their workplace.

Although training is required to be conducted at the time of initial assignment and when a new hazard is introduced, the University has considered and will offer an annual refresher course for affected employees.

### ***Personnel to be Trained and Timing***

- A. 29 CFR 1910.1200 requires all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a Hazard Communication program, labels and other forms of warning, MSDS, and information and training.
- B. Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

### ***Topics to be Covered***

- A. Employees shall be informed of:
  1. The requirements of 29 CFR 1910.1200.
  2. Any operations in their work area where hazardous chemicals are present.
  3. The location and availability of the written hazard communication program described by 29 CFR 1910.1200(h)(1)(iii), including the required list(s) of hazardous chemicals and MSDS.
- B. Employee training shall include at least:
  1. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, the visual appearance or odor of hazardous chemicals when being released, etc.).
  2. Physical and health hazards of chemicals in the work area.
  3. Measures employees can take to protect themselves from physical and health hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemical (such as appropriate work practices, emergency procedure, the use of personal protective equipment, etc.).
  4. Details of the Hazard Communication program developed by the employers, including an explanation of the labeling system and the MSDS and how employees can obtain and use the appropriate hazard information.

### ***Recordkeeping Requirements***

- A. Employers shall develop, implement and maintain at the workplace a written Hazard Communication program.
- B. The employer may rely on an existing Hazard Communication program to comply with the requirements for a written hazard communication program, provided that it meets the criteria established in A of “Personnel to be Trained and Timing.”
- C. The employer shall make the written hazard communication program available upon request, to employees, their designated representatives, the Assistant Secretary of Labor for OSHA and the Director of NIOSH in accordance with the requirements of 29 CFR 1910.20(e).

## Appendix I – Hazard Communication Training Curriculum

### Introduction and Regulatory Overview

- Training Objectives and Requirements
- Review of terms and definitions

### Identification of Hazards

- Routes of Exposure
- Acute vs. Chronic Exposure
- Toxicity of Chemicals

### Chemical Classifications

- Irritants
- Sensitizers
- Corrosives
- Carcinogens
- Systemic Poisons
- Flammables
- Combustible Liquids
- Compressed Gases
- Reactives

### Types of Hazards

- Physical vs Chemical

### Labels

- NFPA and HMIS Labeling Systems
- OSHA Requirements
- How to read labels

### Material Safety Data Sheets

- Review of how to read an MSDS
- Definitions
- Requirements
- Locations

### Personal Protective Equipment

- Eye and Face Protection
- Head Protection
- Foot Protection
- Hand Protection
- Respiratory Protection
- Protective Clothing

### Hazardous Waste

- Review of UNH Hazardous Waste Program and Requirements

### Emergencies

- Medical
- Fire / Evacuation
- Hazardous Material Spill
- Radiation Spill
- Biological / Blood Spill

### Hazard Communication Plan

- Plan and Inventory Locations
- MSDS Locations
- Training Records
- Safety Officer
- Supervisor Responsibilities

### Exercise / Review

## Appendix J – Glossary

<b>ACGIH</b>	The American Conference of Government Industrial Hygienists is a voluntary membership organization of professional industrial hygiene personnel in governmental or educational institutions. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLV's) for hundreds of chemicals, physical agents, and biological exposures indices.
<b>ACUTE EXPOSURE</b>	An intense exposure over a relatively short period of time.
<b>ANSI</b>	The American National Standards Institute is a voluntary membership organization (run with private funding) that develops consensus standards nationally for a wide variety of devices and procedures.
<b>ARTICLE</b>	Any manufactured item which is formed to a specific shape or design during manufacturing; which has an end use function dependent in whole or in part upon its shape or design during end use; and which does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use.
<b>ASPHYXIANT</b>	A chemical (gas or vapor) that can cause death or unconsciousness by suffocation. Simple asphyxiants, such as nitrogen, either remove or displace oxygen in the air. They become especially dangerous in confined or enclosed spaces. Chemical asphyxiants, such as carbon monoxide and hydrogen sulfide, interfere with the body's ability to absorb or transport oxygen to the tissues.
<b>BOILING POINT</b>	The temperature at which the vapor pressure of a liquid equals atmospheric pressure or at which the liquid changes to a vapor. The boiling point is usually expressed in degrees Fahrenheit. If a flammable material has a low boiling point, it indicates a special fire hazard.
<b>“C” OR CEILING</b>	A description usually seen in connection with ACGIH exposure limits. It refers to the concentration that should not be exceeded, even for an instant. It may be written as TLV-C or Threshold Limit Value-Ceiling. (See also <b>THRESHOLD LIMIT VALUE</b> ).
<b>CARCINOGEN</b>	A substance or physical agent that may cause cancer in animals or humans.
<b>CAS NUMBER</b>	A numerical identification method used by the Chemical Abstracts Service of the American Chemical Society.
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CHEMICAL</b>	Any element, chemical compound, or mixture of elements and/or compounds. As broadly applied to the chemical industry, an element or a compound produced by chemical reactions on a large scale for either direct industrial and consumer use or for reaction with other chemicals.
<b>CHEMICAL NAME</b>	The scientific designation of a chemical in accordance with a recognized nomenclature system.
<b>CHEMICAL REACTION</b>	A change in the arrangement of atoms or molecules to yield substances of different composition and properties. (See <b>INSTABILITY</b> ).
<b>CHRONIC EXPOSURE</b>	A prolonged exposure occurring over a period of days, weeks, or years.
<b>COMBUSTIBLE</b>	According to the DOT and NFPA, combustible liquids are those having a flash point at or above 100°F (37.8°C), or liquids that will burn. They do not ignite as easily as flammable liquids. However, combustible liquids can be ignited under certain circumstances, and must be handled with caution. Substances such as wood, paper, etc., are termed “Ordinary Combustibles”.

<b>COMMON NAME</b>	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.
<b>CONCENTRATION</b>	The relative amount of a material in combination with another material. for example, 5 parts of (acetone) per million (parts of air).
<b>CONTAINER</b>	Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. Pipes or piping systems, engines, fuel tanks or other operating systems in a vehicle are not considered containers.
<b>CORROSIVE</b>	A substance that, according to the DOT causes visible destruction or permanent changes in human skin tissue at the site of contact or is highly corrosive to steel.
<b>CUBIC CENTIMETER (cc or cm<sup>3</sup>)</b>	Cubic centimeter, a volumetric measurement which is also equal to one milliliter (ml).
<b>CUBIC METER (m<sup>3</sup>)</b>	A measure of volume in the metric system.
<b>CUTANEOUS</b>	Pertaining to or affecting the skin.
<b>CWA</b>	Clean Water Act
<b>DECOMPOSITION</b>	The breakdown of a chemical or substance into different parts or simpler compounds. Decomposition can occur due to heat, chemical reaction, decay, etc.
<b>DERMAL</b>	Pertaining to or affecting the skin.
<b>DERMATITIS</b>	An inflammation of the skin.
<b>DESIGNATED REPRESENTATIVE</b>	Any individual or organization that an exposed employee gives written authorization to exercise such employee rights under the OSHA Hazard Communication Standard. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written authorization of the exposed employee.
<b>DILUTION VENTILATION</b>	See <b>GENERAL VENTILATION</b> .
<b>DOT</b>	The United States Department of Transportation is the federal agency that regulates the labeling and transportation of hazardous materials.
<b>DYSPNEA</b>	Shortness of breath, difficult or labored breathing.
<b>EPA</b>	The Environmental Protection Agency is the governmental agency responsible for administration of laws to control and/or reduce pollution of air, water, and land systems.
<b>EPA NUMBER</b>	The number assigned to chemicals regulated by the Environmental Protection Agency (EPA).
<b>EPIDEMIOLOGY</b>	The study of disease in human populations.
<b>ERYTHEMA</b>	A reddening of the skin.
<b>ESHC</b>	Environmental Health and Safety Coordinator.
<b>EVAPORATION RATE</b>	The rate at which a material is converted to vapor (evaporates) at a given temperature and pressure when compared to the evaporation rate of given substance. Health and fire hazard evaluations of materials involve consideration of evaporation rates as one aspect of the evaluation.
<b>°F</b>	Degrees, Fahrenheit; a temperature scale.

<b>EXPOSED EMPLOYEE</b>	Any worker employed by UNH who may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies.
<b>FLAMMABLE LIQUID</b>	According to the DOT and NFPA a flammable liquid is one that has a flash point below 100 °F. (See <b>FLASH POINT</b> )
<b>FLASH POINT</b>	The lowest temperature at which a liquid gives off enough vapor to form an ignitable mixture with air and burn when a source of ignition (sparks, open flames, cigarettes, etc.) is present. Two tests are used to determine the flash point: open cup and closed cup. The test method is indicated on the MSDS after the flash point.
<b>GENERAL VENTILATION</b>	Also known as general exhaust ventilation, this is a system of ventilation consisting of either natural or mechanically induced fresh air movements to mix with and dilute contaminants in the workroom air. This is not the recommended type of ventilation to control contaminants that are highly toxic, when there may be corrosion problems from the contaminant, when the worker is close to where the contaminant is being generated, and where fire or explosion hazards are generated close to sources of ignition. (See <b>LOCAL EXHAUST VENTILATION</b> ).
<b>GRAM (g)</b>	A metric unit of weight. One ounce equals 28.4 grams.
<b>GRAMS PER KILOGRAM (g)/kg)</b>	This indicates the dose of a substance given to test animals in toxicity studies. For example, a dose may be 2 grams (of substance) per kilogram of body weight (of the experimental animal).
<b>HAZARD WARNING</b>	Any words, pictures, symbols, or combination thereof which convey the hazards associated with a hazardous chemical in a container.
<b>HAZARDOUS CHEMICAL</b>	Any chemical which poses a physical hazard or health hazard.
<b>HAZARDOUS MATERIAL</b>	Any substance or compound that has the capability of producing adverse effects on the health and safety of humans.
<b>HEALTH HAZARD</b>	A chemical for which there is statistically significant evidence based on at least one scientific study that acute or chronic health effects may occur in exposed employees. The term includes chemicals which are found to be carcinogens, reproductive toxins, hepatotoxins, nephrotoxins, neurotoxins, toxic or highly toxic, corrosive, irritants, sensitizers, or which act on the circulating system, or which damages the lungs, skin, eyes, or mucous membranes.
<b>IARC</b>	International Agency for Research on Cancer
<b>IGNITABLE</b>	A solid, liquid or compressed gas that has a flash point of less than 140°F. Ignitable material may be regulated by the EPA as a hazardous waste as well.
<b>INCOMPATIBLE</b>	The term applied to two substances to indicate that one material cannot be mixed with the other without the possibility of a dangerous reaction.
<b>INGESTION</b>	Taking a substance into the body through the mouth, such as food, drink, medicine, or unknowingly as in contaminated hands or cigarettes, etc.
<b>INHALATION</b>	Breathing in of an airborne substance that may be in the form of gases, fumes, mists, vapors, dusts, or aerosols.
<b>INHIBITOR</b>	A substance that is added to another to prevent or slow down an unwanted reaction or change.
<b>IRRITANT</b>	A substance that produces an irritating effect when it contacts skin, eyes, nose, or respiratory system.

<b>KILOGRAM (Kg)</b>	A unit of weight in the metric system equal to 2.2 pounds.
<b>LC<sub>50</sub></b>	See <b>LETHAL CONCENTRATION<sub>50</sub></b> .
<b>LD<sub>50</sub></b>	See <b>LETHAL DOSE<sub>50</sub></b> .
<b>LEL</b>	See <b>LOWER EXPLOSIVE LIMIT</b> .
<b>LETHAL CONCENTRATION<sub>50</sub></b>	The concentration of an air contaminant (LC <sub>50</sub> ) that will kill 50 percent of the test animals in a group during a single exposure.
<b>LETHAL DOSE<sub>50</sub></b>	The dose of a substance or chemical that will (LD <sub>50</sub> ) kill 50 percent of the test animals in a group within the first 30 days following exposure.
<b>LFL</b>	See <b>LOWER EXPLOSIVE LIMIT</b> .
<b>LITER (L)</b>	A measure of capacity. One quart equals .9 liters.
<b>LOCAL EXHAUST VENTILATION</b>	(Also known as exhaust ventilation.) A ventilation system that captures and removes the contaminants at the point where they are being produced before they escape into the workroom air. The system consists of hoods, ducts, a fan and possibly an air-cleaning device. Advantages of local exhaust ventilation over general ventilation include: it removes that contaminant rather than dilutes it; it requires less air flow and thus is more economical over the long term; and the system can be used to conserve or reclaim valuable materials. However, the system must be properly designed with the correctly shaped and placed hoods, and correctly sized fans and ductwork.
<b>LOWER EXPLOSIVE LIMIT (LEL)</b>	(Also know as Lower Flammable Limit). The lowest concentration of a substance that will produce a fire or flash when an ignition source (flame, spark, etc.) is present. It is expressed in percent of vapor or gas in the air by volume. Below the LEL or LFL, the air/contaminant mixture is theoretically too “lean” to burn. (See also <b>UEL</b> ).
<b>MELTING POINT</b>	The temperature at which a solid changes to a liquid. A melting range may be given for mixtures.
<b>MILLIGRAM (mg)</b>	A unit of weight in the metric system. One thousand milligrams equal one gram.
<b>MILLIGRAMS PER CUBIC METER (mg/m<sup>3</sup>)</b>	Units used to measure air concentrations of dusts, gases, mists, and fumes.
<b>MILLIGRAMS PER KILOGRAM (mg/kg)</b>	This indicates the dose of a substance given to test animals in toxicity studies. For example, a dose may be 2 milligrams (of substance) per kilogram of body weight (of the experimental animal).
<b>MILLILITER (ml)</b>	A metric unit used to measure capacity. One milliliter equals one cubic centimeter. One thousand milliliters equal one liter.
<b>MSDS</b>	Material Safety Data Sheet.
<b>MSHA</b>	The Mine Safety and Health Administration; a federal agency that regulates the mining industry in the safety and health area.
<b>MUTAGEN</b>	Anything that can cause a change (or mutation) in the genetic material of a living cell.
<b>NARCOSIS</b>	Stupor or unconsciousness caused by exposure to a chemical.
<b>NTP</b>	National Toxicology Program

<b>NFPA</b>	The National Fire Protection Association is a voluntary membership organization whose aims are to promote and improve fire protection and prevention. NFPA has published 16 volumes of codes known as the National Fire Codes. Within these codes is Standard No. 704, Identification of the Fire Hazards of Materials. This is a system that rates the hazard of a material during a fire. These hazards are divided into health, flammability, and instability hazards and appear in a well-known diamond system using from zero through four to indicate severity of the hazard. Zero indicates no special hazard and four indicates severe hazard.
<b>NIOSH</b>	The National Institute of Occupational Safety and Health is a federal agency that among its various responsibilities is to train occupational health and safety professionals, conduct research on health and safety concerns, and test and certify respirators for workplace use.
<b>ODOR THRESHOLD</b>	The minimum concentration of a substance at which a majority of test subjects can detect and identify the substance's characteristic odor.
<b>ORAL</b>	Having to do with the mouth.
<b>OSHA</b>	The Occupational Safety and Health Administration - a federal agency under the Department of Labor that publishes and enforces safety and health regulations for most businesses and industries in the United States.
<b>OXIDATION</b>	The process of combining oxygen with some other substance to a chemical change in which an atom loses electrons.
<b>OXIDIZER</b>	A substance that gives up oxygen easily to stimulate combustion of organic material.
<b>OXYGEN DEFICIENCY</b>	An atmosphere having less than the normal percentage of oxygen found in normal air. Normal air contains 21% oxygen at sea level.
<b>PERMISSIBLE EXPOSURE LIMIT (PEL)</b>	An exposure limit that is published and enforced by OSHA as a legal standard. PEL may be either a time-weighted-average (TWA) exposure limit (8-hour), a 15-minute short-term exposure limit (STEL), or a ceiling (C). The PEL's are found in Tables Z-1, Z-2, or Z-3 or OSHA regulations 1910.1000. (See also <b>TLV</b> ).
<b>PERSONAL PROTECTIVE EQUIPMENT</b>	Any devices or clothing worn by the worker to protect against hazards in the environment. Examples are respirators, gloves, and chemical splash goggles.
<b>PHYSICAL HAZARD</b>	A chemical for which there is scientific evidence that it is a combustible liquid, a compressed gas, an explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive.
<b>POLYMERIZATION</b>	A chemical reaction in which two or more small molecules combine to form larger molecules that contain repeating structural units of the original molecules. A hazardous polymerization is the above reaction with an uncontrolled release of energy.
<b>PPE</b>	Personal Protective Equipment.
<b>PPM</b>	Parts (of vapor or gas) per million (parts of air) by volume.
<b>INSTABILITY</b>	A substance's susceptibility to undergoing a chemical reaction or change that may result in dangerous side effects, such as explosions, burning, and corrosive or toxic emissions. The conditions that cause the reaction, such as heat, other chemicals, and dropping, will usually be specified as "Conditions to Avoid" when a chemical's instability is discussed on a MSDS.
<b>RESPIRATOR</b>	A device which is designed to protect the wearer from inhaling harmful contaminants.

<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RESPIRATORY HAZARD</b>	A particular concentration of an airborne contaminant that, when it enters the body by way of the respiratory system or by being breathed into the lungs, results in some bodily function impairment.
<b>SARA (Title III)</b>	Superfund Amendment and Reauthorization Act
<b>SENSITIZER</b>	A substance that may cause no reaction in a person during initial exposures, but afterwards, further exposures will cause an allergic response to the substance.
<b>SHORT TERM EXPOSURE LIMIT</b>	Represented as STEL or TLV-STEL, this is the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures. Also the daily TLV-TWA must not be exceeded.
<b>SKIN</b>	This designation sometimes appears alongside a TLV or PEL. It refers to the possibility of absorption of the particular chemical through the skin and eyes. Thus, protection of large surface areas of skin should be considered to prevent skin absorption so that the TLV is not invalidated.
<b>STEL</b>	Short Term Exposure Limit.
<b>SUBSTANCE</b>	Any chemical entity.
<b>SYNONYM</b>	Another name by which the same chemical may be known.
<b>SYSTEMIC</b>	Spread throughout the body; affecting many or all body systems or organs; not localized in one spot or area.
<b>TERATOGEN</b>	An agent or substance that may cause physical defects in the developing embryo or fetus when a pregnant female is exposed to that substance.
<b>THRESHOLD LIMIT VALUE (TLV)</b>	Airborne concentrations of substances devised by the ACGIH that represent conditions under which it is believed that nearly all workers may be exposed day after day with no adverse effect. TLV's are advisory exposure guidelines, not legal standards that are based on evidence from industrial experience, animal studies, or human studies when they exist. There are three different types of TLV's: Time Weighted Average (TLV-TWA), Short Term Exposure Limit (TLV-STEL) and Ceiling (TLV-C). (See also <b>PEL</b> .)
<b>TIME WEIGHTED AVERAGE (TWA)</b>	The average time, over a given work period (e.g. 8- hour workday), of a person's exposure to a chemical or an agent. The average is determined by sampling for the contaminant throughout the time period. Represented as TLV-TWA.
<b>TOXICITY</b>	The potential for a substance to exert a harmful effect on humans or animals and a description of the effect and the conditions or concentrations under which the effect takes place.
<b>TRADE NAME</b>	The commercial name or trademark by which a chemical is known. One chemical may have a variety of trade names depending on the manufacturers or distributors involved.
<b>TRADE SECRET</b>	Any confidential formula, pattern, process, device, or information that is used in an employer's business and gives that employer an opportunity to obtain an advantage over competitors who do not know or use it.
<b>UEL</b>	See <b>UPPER EXPLOSIVE LIMIT</b> .
<b>UFL</b>	See <b>UPPER EXPLOSIVE LIMIT</b> .
<b>UNSTABLE LIQUID</b>	A liquid that, in its pure state or as commercially produced will react vigorously in some hazardous way under shock conditions (i.e., dropping), certain temperatures, or pressures.

<b>UPPER EXPLOSIVE LIMIT (UEL/UFL)</b>	Also known as Upper Flammable Limit. Is the highest concentration (expressed in percent of vapor or gas in the air by volume) of a substance that will burn or explode when an ignition source is present. Theoretically above this limit the mixture is said to be too “rich” to support combustion. The difference between the LEL and the UEL constitutes the flammable range or explosive range of a substance. That is, if the LEL is 1ppm and UEL is 5ppm, then the explosive range of the chemical is 1ppm to 5ppm. (See also <b>LEL</b> )
<b>VAPOR</b>	The gaseous form of substances, which are normally in the liquid or solid state (at normal room temperature and pressure). Vapors evaporate into the air from liquids such as solvents. Solvents with low boiling points will evaporate.
<b>WORK AREA</b>	A room or defined space in a workplace where hazardous chemicals are produced or used, and where exposed employees are present.
<b>WORKPLACE</b>	An establishment, job site, or project at one geographical location containing one or more work areas.