

SECTION	V.	Chemical Safety
Chapter	2.	Hazard Communication
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HAZARD COMMUNICATION

INTRODUCTION

PURPOSE

This program applies to all non-laboratory work areas; chemical safety in laboratories is covered by the Duke Chemical Hygiene Plan. The Hazard Communication Program, as its name indicates, involves chemical safety education through communication of information. Its intent is for Duke employees to learn about and respect the chemical products they use in their job functions. Through this communication process, employees will gain better understanding of how to use chemicals safely and how to respond if they become exposed to chemicals. The Hazard Communication Program reflects the Occupational Safety and Health Administration's (OSHA) 2012 revised Hazard Communication Standard (HCS).

DEFINITIONS

Chemical – any substance, or mixture of substances.

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

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

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

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

Hazard not otherwise classified (HNOC) – an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes.

Hazard statement – a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

Hazardous chemical - Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified (HNOC). For the purpose of this program this definition includes pharmaceutical agents which are in powder or liquid form, not intended for immediate patient use.

Health hazard - a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 29 CFR 1910.1200 – Health Hazard Criteria.

Physical hazard - a chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid, or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. The criteria for determining whether a chemical is classified as a physical hazard are in Appendix B of the HCS

Pictogram – a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this HCS for application to a hazard category. The [HCS Pictograms and Hazards](#) information sheet provides details on the pictograms.

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

Product identifier – is the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product

identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

Safety data sheet (SDS) –is written or printed material (formally referred to as a Material Safety Data Sheet (MSDS)) concerning a hazardous chemical that is prepared in accordance with the OSHA Hazard Communication Standard.

Secondary container – is a container into which one or more chemicals have been transferred from their original shipped container. It is not the original container shipped by the manufacturer or distributor.

Shipped container – is a chemical container shipped by the chemical manufacturer or importer. This includes chemicals shipped by Duke.

Signal word – a word used to indicate the relative level of severity of hazards and alert the reader to a potential hazard on the label. The signal words used in the HCS are “danger” and “warning”. “Danger” is used for the more severe hazards, while “warning” is used for the less severe.

RESPONSIBILITIES

Departments shall:

- Develop and maintain an accurate list of all chemical products used in departmental work areas.
- Maintain Safety Data Sheets (SDSs) for all hazardous chemicals on the list.
- Ensure that SDSs are readily accessible to employees during all hours that employees work in the area.
- Prepare SDSs for chemical products formulated or manufactured by their department.
- Ensure that workplace containers of chemical products are properly labeled.

Supervisors shall:

- Conduct additional on-the-job training for specific chemical substances used in their workplaces.
- Review the hazard information on all new chemical products brought into the workplace.
- Request additional information from OESO as necessary.

Employees shall:

- Understand the hazards of chemical substances used in their workplaces and the appropriate procedures to protect themselves from exposure.
- Understand how to read chemical labels and how to label secondary containers.
- Know where to locate and how to use the information found in the SDSs for chemicals in their workplace.

OESO shall:

- Provide Hazard Communication Training for employees who work with or around hazardous chemicals in their area as part of employee orientation through the OESO on-line training resource.
- Maintain the on-line access to SDS resources for chemical users.
- Assist departments with workplace labeling requirements and in the preparation of SDSs.
- Evaluate the hazards and use of chemical products in work areas.

Contractors who bring hazardous chemicals onto Duke University property shall:

- Make the company's Hazard Communication Program available for review at the work site.
- Maintain an up to date list of hazardous chemicals with all corresponding SDSs.

PROCEDURES

UNDERSTANDING CHEMICAL HAZARDS

In order to work with chemical products safely, it is important that the user have sufficient information. Improvements to product labeling over the years have resulted in the availability of good safety information on the actual product. This means that the product label is the primary resource for users. Chemical products will also have additional information in a document called a Safety Data Sheet (SDS). Both chemical labels and SDSs provide users with the specific information regarding the physical and health hazards of the chemical product. This information is derived from the evaluation of the chemical hazards, the determination of the hazard classes, and, where appropriate, the category of each class that applies to the chemical product. Precautionary statements and exposure control/personal protection information provide the recommended measures that should be taken to protect against hazardous exposures.

LABELS

General

All containers of hazardous chemical products must be labeled with the following information:

- **Product identifier** (used on the SDS) – Is the name or number used to identify the hazardous chemical.
- **Signal word** – is one of two words used to alert the chemical user. “Danger” is used for the more severe hazards, while “warning” is used for the less severe.
- **Hazard statement(s)** – Describes the nature, and degree (where appropriate) of the hazard of the chemical.
- **Pictogram(s) with red borders** – The pictogram on the label is determined by the chemical hazard classification and is used as a visual aid to convey the hazard(s) associated with the chemical.
- **Precautionary statement(s)** - Is a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.
- Name, address, and telephone number of the chemical manufacturer, importer, or responsible party.

Chemical containers in the workplace with labels complying with the previous version of the OSHA standard need not be re-labeled according to the revised requirements.

Workplace labeling

Secondary containers into which hazardous chemicals are transferred must be labeled, tagged or marked with either:

- The required information from the label on the original container; or,
- The product identifier AND words, pictures, symbols, or a combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information available, will provide employees with the hazards of the chemical.

Labels are not required on secondary containers when the chemical is intended for the immediate use by the employee performing the transfer and the container does not leave the possession of that employee.

Stationary process containers

Departments 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 container to which it is applicable and conveys the required information to be found on labels.

Pharmaceuticals

Drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

Defacing labels

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

SAFETY DATA SHEET (SDS)

General

The Safety Data Sheet has 16 sections that includes information on the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. A list of all 16 sections of the SDS is presented below:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information (non-mandatory)
13. Disposal considerations (non-mandatory)
14. Transport information (non-mandatory)
15. Regulatory information (non-mandatory)
16. Other information, including date of preparation or last revision.

A list of terms used in SDSs along with their definitions can be found in the SDS Terms supplement to the Duke University Safety Manual. Section II. Chapter 4. Hazardous Materials of the Duke University Safety Manual contains information on the hazard class and categories for hazardous chemicals.

Obtaining a Safety Data Sheet

In most cases, SDSs are received directly from the manufacturer and should be kept on file in the department for easy access by employees. SDSs can also be found on the OESO SDS web page found at www.safety.duke.edu. If SDSs are needed for chemical products and cannot be found by the user, the Departmental Safety Coordinator must send a SDS request form (Supplement K) to the OESO. Manufacturer's name and chemical identity are the minimum data necessary to obtain an SDS; however, it is very important to list as much information as possible on the form. OESO will obtain the SDS and forward a copy to the requesting department.

SDSs for pharmaceuticals may be found at the OESO SDS webpage found at www.safety.duke.edu. If the user cannot find the necessary SDS, contact the Pharmacy Drug Information Center by calling 919-684-5125.

In an emergency involving chemicals, call the Duke University Police at 911 (from a Duke phone) or 919-684-2444.

CHEMICAL PRODUCT LIST

Lists should reflect the identities of chemical products used in departmental work areas. Departments may choose to either develop lists for the whole department or for each work area individually. Chemical lists are subject to audit by the OESO. A Standard Operating Procedure (SOP) may be required for chemical products that present a significant hazard under conditions of use.

MANUFACTURE OF CHEMICAL PRODUCTS

When a Duke Department makes a chemical material for distribution to other groups, the product must be labeled as described above. In addition, a Safety Data Sheet must be prepared. The OESO has a SDS template for departments to use and will provide assistance as necessary. Any distribution of Duke-manufactured chemical products must be accompanied by the SDS.

MULTI-EMPLOYER WORKPLACE

If chemicals are to be used by Duke University personnel in the same area that contractor employees are assigned, the Duke Project Manager has the responsibility of informing the

contractor of potential hazards in the work environment. The Project Manager or Supervisor must specifically discuss the following:

- The hazards of the chemical(s) present in the work area.
- How to read and understand product labels.
- How to obtain copies of SDSs for products used by Duke personnel.
- What precautionary measures the contractor should take during both normal operating conditions and during foreseeable emergencies.

TRAINING

Hazard Communication training is required for all employees before they begin work with or around hazardous chemicals. The on-line Chemical Safety Training contains general information about chemical safety and is intended to prepare the employee for workplace specific hazard training.

Before the employee begins work in their area, the supervisor (or designee) conducts workplace specific hazard communication training which includes:

- Identification of all chemical hazards in their workplace.
- Measures employees can take to protect themselves.
- Methods of detecting releases and assessing potential for exposure.
- Identification and instruction for use of all chemical safety resources including SDSs, SOPs, chemical lists, emergency response information, and other department specific resources.
- Identification and instructions for use for all safety equipment and personal protective equipment (PPE).

Non-laboratory employees who use chemical products are required to take the on-line Chemical Safety Training at a frequency determined by the Duke University Safety Committee (DUSC).

REFERENCES

Code of Federal Regulations, Title 29, Part 1910.1200 (OSHA), *Hazard Communication*