LINDENWOOD

HAZARD COMMUNICATION PLAN

(HAZCOM)

Lindenwood University System

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CONTENTS

Abbreviations List

CHO Chemical Hygiene Officer

DNR Department of Natural Resources

DOT Department of Transportation

EHS Environmental Health and Safety

EPA Environmental Protection Agency

GHS Globally Harmonized System of Classification and Labeling of Chemicals

HCP Hazard Communication Plan (HazCom)

HCR Hazard Communication Regulation

HCS Hazard Communication Standard

NFPA National Fire Protection Association

OSHA Occupational Safety and Health Administration

PI Principal Investigator

PPE Personal Protective Equipment

SDS Safety Data Sheet

SOP Standard Operating Procedure

Chapter 1: Introduction to Lindenwood Hazard Communication (HAZCOM)

1. Purpose

Lindenwood University is dedicated to providing safe laboratory and working facilities for employees, students, official visitors, and hired contractors. The Hazard Communication Plan (HazCom) for the Lindenwood University System is intended to highlight University policies and practices that are necessary for communicating and promoting the safe use, handling, and storage of regulated hazardous chemicals at Lindenwood University. This plan meets the requirement for written hazard communication plan outlined by OSHA regulation (29 CFR 1910.1200), additional requirements outlined by the OSHA guide to the "Globally Harmonized System of Classification and Labeling of Chemicals," and EPA Right to Know provisions.

The HazCom Plan applies to non-laboratory workplaces and activities throughout all Lindenwood University locations within the Missouri and Illinois main campuses, satellite campuses, and all other University-owned properties, leased spaces, and field locations under the control of University Operations where chemicals are used, transported, stored or manufactured.

1.1. Scope:

This HazCom plan applies to all regulated hazardous chemicals used under routine conditions and non-routine operations or emergency situations. The HazCom Plan applies to all faculty, staff, or students who work with or supervise the use of hazardous chemicals at Lindenwood University. Use of and exposure to potentially hazardous substances by individuals considered "laboratory workers" are addressed in the Chemical Hygiene Plan in compliance with 29 CFR 1910.1450.

1.2. Responsibilities:

1.2.1. It is the responsibility of all University faculty, students, and staff to comply with the requirements of the HazCom Plan. The HazCom plan is made available to all faculty, staff, students, and other parties, including contractors, to whom these policies apply. This Plan is distributed online and is available upon request from University administration.

1.2.2. The Health and Safety Committee will review this plan annually and revise the Plan as necessary or when required to by changes in regulation, policy, and best practice.

1.3. Required elements of a Hazard Communication Program (29 CFR 1910.1200(e):

1.3.1. Lindenwood employees, students, official visitors and contractors must be made aware of and given access to Lindenwood's SafeColleges Safety Data Sheets (SDS) Database when operating or passing through areas in which chemicals are used, transported, and/or stored.

1.3.2. Lindenwood must inventory all hazardous chemicals as they come into university possession.

1.3.3. Each chemical container must be labeled as outlined within Chapter 2 of this HazCom Plan, following GHS guidelines.

1.3.4. Designees outlined within Lindenwood HazCom Plan must collect the Safety Data Sheet (SDS) for each hazardous chemical used within their work sphere.

1.3.4.1. The SDS Sheet must follow the outlined specifications within Chapter 3 of this HazCom Plan.
1.3.4.2. The SDS sheets must be available at all times to Lindenwood employees, students, official visitors and contractors working or visiting within areas in which regulated materials are stored, used, or transported.
1.3.4.3. Lindenwood employees and students must be trained on how to understand the labeling/SDS layout and the necessary precautions required (as described in Lindenwood University's CHP)

1.4. Exceptions to the Hazard Communication Standard:

The HazCom Plan 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." The following chemicals listed in 29 CFR 1910.1200(b)(5) are exempt from HCR restrictions as long as they used in a manner congruent to their intended use. Any item used outside of general consumer parameters are subject to HCR restrictions. If small amounts of consumer products are the only materials used by the employee, they still must be generally informed regarding this HazCom Plan. In addition to hazardous substances defined by the Solid Waste Disposal Act, RCRA, or CERCLA, the following items are considered exempt:

1.4.1. Tobacco or tobacco products;
1.4.2. Wood or wood products;
1.4.3. Food or alcoholic beverages;
1.4.4. Drugs regulated by the Food and Drug Administration;
1.4.5. Cosmetics;
1.4.6. Consumer products as defined in the Consumer Product Safety Act and Federal Hazardous Substances Act;
1.4.7. Ionizing and nonionizing radiation;
1.4.8. Biological hazards.

2. The following definitions apply for the purposes of this HazCom Plan:

2.1. Hazardous Chemical/Material: Any element, chemical compound, or mixture of elements, which may promote physical hazard or health hazard. Physical hazards include flammability, combustibility, instability, explosiveness, and water reactivity. Health hazards are toxic, poisonous, or corrosive. They cause damage to the eyes, skin, lungs, internal organs, etc. Additionally, health hazards are specifically named in the federal regulations, have a Threshold Limit Value assigned by the American Conference of Governmental Industrial Hygienists (ACGIH), have been named by the National Toxicology Program or the International Agency for Research on Cancer as a carcinogen, or if they meet the specific laboratory standards for flammables, corrosives, toxins, and irritants as defined in the Occupational Health and Safety Standard 1910.1000 Subpart Z, Air Contaminants. Chemicals include both pure and mixed forms of solids, liquids, gases, and liquids stored in gas cylinders, and substances that may be released during a procedure or work task.

2.2. Safety Data Sheet (SDS): Written information from the manufacturer of a chemical describing the hazardous ingredients, physical and chemical data, fire and explosion hazards, reactivity, health hazards, precautions for safe handling, and special protection information.

2.3. OSHA Occupational Safety and Health Administration: of the US Department of Labor, the federal agency responsible for regulating and enforcing safety and health requirements in the workplace.

2.4. Health Hazard: For the purposes of this policy, "health hazard" refers to "a chemical that 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; carcinogenity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A of the Hazard Communication Standard (§1910.1200) and §1910.1200(c)." (29 CFR 1910.1450(b))

2.5. Toxicity and Health Hazards Toxicology: is the study of the nature and action of poisons. Toxicity is the ability of a chemical molecule or compound to produce injury once it reaches a susceptible site in or on the body. Descriptions of toxicity (e.g. low, moderate, severe, etc.) depend on the amount needed to cause an effect or the severity of the effect. Toxicity hazard is the probability that injury will occur considering the manner in which the substance is used.

2.6. GHS: As stated within OSHA's Foundation of Workplace Chemical Safety Programs "In 2003, the United Nations (UN) adopted the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The GHS includes criteria for the classification of health, physical and environmental hazards, as well as specifying what information should be included on labels of hazardous chemicals as well as safety data sheets…The official text of the GHS can be found on the UN web page."

2.7. NFPA: For the purposes of this document, the National Fire Protective Association structures the labeling parameters Lindenwood utilizes to identify a specific materials fire related measure.

Chapter 2: Hazardous Chemicals & Materials

1. Lindenwood University personnel working within areas where Hazardous Chemicals and Materials are stored, used or transported are required to inform employees, students, official visitors and contractors of chemical hazards within said area. See the Chapter 2 Action Table for examples of situations and required actions.

2. Identifying Hazardous Chemicals

2.1. Action Table

Situation	Examples	Your Actions
Recently received chemicals/known hazardous materials	• Ordered supplies • Materials donated	• Chemicals/materials recently received that are of known hazardous status must have a label that is printed in English, marked with date received, follows GHS labeling Standards • Have an SDS sheet • If SDS sheet is not present, chemical/material must be returned to vendor (online distribution acceptable)
Known Hazardous Chemical or Material leaving its vendor packaging	• Compressed gas cylinder	• Check label, SDS, and other reference materials and determine the hazards • Add to SafeColleges SDS Inventory • Update Label if it does not follow HazCom guidelines
Lindenwood Prepared Substance	• Dilution of a concentrated degreaser • Solvent mixture poured into Parts Washer • In-Lab Prepared Substance • Reagents, stock solutions, and bulk quantities of chemicals mixed for in-house use	• labeled in accordance with GHS Standards as outlined in Chapter 2 unless the container will be emptied during the user's work shift • Check labels, SDS, and other reference materials and determine hazards • Address hazards/controls in CHP SOP's • Train necessary employees

Reactionary procedure creating hazards from previously non-hazardous materials	• Cutting foam, nylon rope or other plastics with a "hot knife" • Dust generating procedures – (i.e. power tool and compressed air usage) • Working with asbestos containing building materials • 3D printing & laser cutting	• Recognize the hazard • Address within CHP SOPs • Train necessary employees
Material put into secondary container/original containers label is no longer legible	• Container label becomes illegible • Ceramic glaze transferred to secondary container for detail work • Material transferred into beaker	• If the material will be consumed completely then the second container does not need to be labeled. • If the material will be under direct control of the individual who placed it in the container the material does not need to be labeled. • If the material will not be under the initial individuals control or stay in the secondary container for longer than their work session, the container must be labeled in accordance with GHS guidelines.
Unique Labeling Situations	• Un-labelable containers (labels impede the process physically) • Tubing, ducting, pipework • Containers physically too small to attach a label	• Lindenwood and Fire agency practices may be employed, such as: placards, tags, signage, numeric/color coded diagrams which identify the location of proper labels. • If occurrence is anything but rare, check with Lindenwood EHS for further guidance.

3. Additional Labeling Standards for Hazardous Material Containers

3.1. Waste Labeling: Hazardous waste is exempt from the HazCom plan and inventory requirements in SafeColleges SDS. However, other requirements are outlined within Lindenwood University's CHP and should be referenced. Personnel handling hazardous waste must be informed of potential hazards and the necessary precautions they should take.

3.2. Peroxide Forming Materials: Peroxide-forming substances need to be labeled separately from others outlined within this HazCom Plan. The label shown below should be filled out and attached to the material. Of particular importance is the date the original container was first opened. These labels are available by contacting: (EHS@lindenwood.edu)

3.3. NFPA Labeling: Fire departments use the NFPA 704 labeling system to convey general information about the hazards of chemicals to emergency responders in the case of a fire or spill inside of a room. This system rates a chemical's hazards, on a scale of 0-4 with 4 being the most hazardous (opposite of the GHS). This labeling system can be used in addition to the GHS label requirements, but is not a substitute for proper secondary labeling which should include the name of the substance, signal word, and hazard.

4. Pictogram Communications

4.1. HCS Pictograms and Hazards: The HCS (Hazard Communication Standard) requires pictograms be present on all labels. Pictograms work to alert users of the hazards which they may be exposed to through usage of particular chemicals and materials. Approved pictograms consist of a symbol on a white background, outlined within a red border. The presence of any particular pictograms on a label is determined by the chemical/materials hazard classification.

Health Hazard  ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity	**Flame**  ▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides	**Exclamation Mark**  ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  ▪ Gases Under Pressure	**Corrosion**  ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals	**Exploding Bomb**  ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
Flame Over Circle  ▪ Oxidizers	**Environment** (Non-Mandatory)  ▪ Aquatic Toxicity	**Skull and Crossbones**  ▪ Acute Toxicity (fatal or toxic)

4.2. NFPA Pictograms

Specific Hazards	
OX	oxidizers
ACID	acids
ALK	alkali materials
COR	corrosive materials
~~W~~	use no water

Hazard:	Fire Hazard	Health Hazard	Reactivity
Color:	Red	Blue	Yellow
Location:	Top Quadrant	Left Quadrant	Right Quadrant
Rating	Description of Numeric Rating		
4	Flash Point <73°F, Boiling Point <100°F	Deadly	May Detonate
3	Flash Point <73°F and Boiling Point ≥100°F, or Flash Point 73°F - 100°F	Extreme danger	Shock and heat may detonate
2	Flash Point >100°F and ≤200°F	Hazardous	Violent chemical change
1	Flash Point ≥200°F	Slightly hazardous	Unstable if heated
0	Will not burn	Normal material	Stable

Section 3. Keeping Safety Data Sheets (SDS)

1. University departments and areas utilizing regulated chemicals and/or materials are required to enter and maintain a hazardous chemical inventory in an accepted Lindenwood University System online SDS management system. As detailed in the HCR requirements, designated individuals are required to update the SafeColleges SDS database in accordance with work processes or chemical use modifications. Annual review at the departmental level of this database is mandated by Lindenwood EHS to ensure compliance with local, state, and federal regulations.

2. The Occupational Safety and Health Administration (OSHA) requires all chemical manufacturers, wholesalers, and distributors provide Safety Data Sheets (SDS) for the products which they produce and sell. OSHA also requires that employers maintain, in the workplace, access to SDS for each hazardous chemical. Proper labeling of materials is required at all times as well as making every worker aware of an accessible online database containing all SDS sheets.

3. Laboratory Supervisors and Principle Investigators, or their designees, are responsible for ensuring compliance with SDS requirements and Hazard Communication standards. The following platforms are available for ensuring compliance with this HazCom Plan:

3.1. Laboratories, studios, and spaces in which faculty, staff, and students engage in the use of chemicals for instruction, training, or research develop and maintain SDS libraries in the SafeColleges System.
3.2. Facilities and operations spaces in which staff engage in the use of chemicals for daily operations and maintenance develop and maintain SDS libraries in the SafeColleges SDS management system.
3.3. Alternative systems may be used at the School, department, or lab level upon review and approval by the Health and Safety Committee. These systems must be in compliance with OSHA requirements for Hazard Communications and University policy for making SDS available in standard and emergent situations.

4. SDS Formatting

With any chemical, it is prudent to consult the SDS before use. In general, an SDS consists of the following sections:

4.1. Section 1 - Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.
4.2. Section 2 - Hazard(s) identification includes all hazards regarding the chemical; required label elements.
4.3. Section 3 - Composition/information on ingredients includes information on chemical ingredients; trade secret claims.
4.4. Section 4 - First-aid measures includes important symptoms/ effects, acute, delayed; required treatment.
4.5. Section 5 - Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.
4.6. Section 6 - Accidental release measures list emergency procedures; protective equipment; proper methods of containment and cleanup.

4.7. Section 7 - Handling and storage lists precautions for safe handling and storage, including incompatibilities.
4.8. Section 8 - Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).
4.9. Section 9 - Physical and chemical properties list the chemical's characteristics.
4.10. Section 10 - Stability and reactivity lists chemical stability and possibility of hazardous reactions.
4.11. Section 11 - Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.
4.12. Section 12 - Ecological information
4.13. Section 13 - Disposal considerations
4.14. Section 14 - Transport information
4.15. Section 15 - Regulatory information
4.16. Section 16 - Other information includes the date of preparation or last revision.

5. SDS Availability

5.1. Vendors are required by OSHA to provide SDS sheets for all purchased chemicals or materials. Links to obtain SDS sheets are also available on line at SafeColleges SDS or the applicable SDS platform.
5.2. SDS sheets relevant to specific areas of use need be linked within said area. Acceptable forms include printed QR codes generated and linked to the Lindenwood SafeColleges database, URLs linked within a syllabus or Canvas. Paper SDS are acceptable as a means to make SDS available within a specific area, but must be reflective of an SDS library on an applicable online SDS platform.
5.3. All Lindenwood employees, students, official visitors, and hired contractors must be made aware of how to locate any particular SDS for a chemical or material utilized within their work area.

6. SDS Maintenance

6.1. Employees should be familiar with the information contained in the SDS before a chemical is used. Questions should be directed to the supervisor or a Lindenwood Environmental Health and Safety representative.
6.2. Chemicals that are not within Lindenwood University’s SafeColleges SDS database should not be utilized. As outlined in Chapter 2 – Action Table, any such chemical/material should be returned to the vendor or held, un-utilized, until an SDS is received and filed.
6.3. No individual operating in an official Lindenwood capacity should accept samples of chemicals or materials without obtaining an SDS. In these instances, if the chemical/material is being stored or utilized outside the work shift of the individual who accepted said material, the SDS sheet must be entered into Lindenwood’s Safe Colleges SDS Database.

Chapter 4: Training

1. Scope of Training

The HazCom and training requirements outlined in this section applies to all faculty, staff, or students who work with or supervise the use of hazardous chemicals at Lindenwood University. Use of and exposure to potentially hazardous substances by individuals considered "laboratory workers" are addressed in the Chemical Hygiene Plan in compliance with 29 CFR 1910.1450.

1.1. Individuals exempt from HazCom regulations and individuals who do not fall under the parameters of Lindenwood's CHP should at least be made familiar with this HazCom.

1.2. It is the responsibility of the staff or faculty member who brings in a contractor or vendor to provide information about this HazCom and associated policies or training requirements. Any SDS associated with their work area should be made available for review by contractors. Request for further information required by contractors or vendors should be directed to the staff or faculty member who brought in the contractor. Contractors are also expected to maintain SDS for any chemical or material used while performing duties at any space in the Lindenwood University system.

2. Training Courses

Lindenwood EHS and HR has identified several Safe Colleges courses focusing on both safety and overarching regulations. Refer to the below chart for guidance. Links to required training are sent out on a staggered annual basis.

Type	Safe Colleges Training Guide
General Employee	LINK
Facilities Personnel	LINK
Laboratory Employee	LINK

Additional resources:

- OSHA Hazard Classification – Contains detailed information regarding hazard categories and classifications
- OSHA GHS Guide - Contains guidance regarding the Globally Harmonized Classification and Labeling system

3. Documentation/Record Keeping

Records of HazCom training must be maintained by individual Schools, Departments, and Facilities groups. Documentation pertaining to an individual training needs to be kept on site. A link to training records will suffice. Records must be able to be quickly obtained in the case of an EPA (Illinois) or DNR (Missouri) inspection and or individual incident. Records must be retained for as long as an individual is an employee of Lindenwood University and/or an active student at Lindenwood University.

3.1. These records should include:

3.1.1. Name
3.1.2. Date of said training
3.1.3. Scope of training
3.1.4. Specific training courses completed

3.2. A Laboratory or Site-Specific CHP may require additional training specific to chemical hazards or exposures. The Principle Investigator, Laboratory Supervisor, or designee for a specific CHP is responsible for ensuring individuals covered by the CHP have completed and documented all required training. Additional training is required, but not limited to, the following circumstances:

3.2.1. Use of any Particularly Hazardous Substance. These additional training requirements will be reviewed by the Health and Safety Committee on a case-by-case basis.
3.2.2. Use of any radiation producing equipment or materials with potential radiation exposure. These additional training requirements will be reviewed by the Radiation Safety Committee and reported to the Health and Safety Committee on a case-by-case basis.