I. Purpose

The OSHA Hazard Communication standard requires the hazards of all chemicals produced or imported to be classified, and information concerning the classified hazards is transmitted to employers and employees. Employees have the right to know about the hazards and identities of the chemicals they may be exposed to in the workplace. This plan outlines the requirements of the standard and their applicability to affected employees at Ursinus College.

II. Scope

All Ursinus College employees who may work with or around hazardous chemicals in a non-laboratory setting must comply with the Hazard Communication Plan. Those employees working in laboratories shall comply with the Ursinus College Chemical Hygiene Plan and shall comply with the labeling, safety data sheet, and information and training requirements of the Hazardous Communication Standard. Laboratory personnel must

A. Ensure all labels on incoming containers of hazardous chemicals are intact.
B. Maintain Safety Data Sheets (SDS) and ensure accessibility to all laboratory personnel.
C. Receive training and information on the physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area, methods and observations to detect the presence or release of hazardous chemicals, how to protect self from the hazards, the labeling system, safety data sheets, and details of the College's hazardous communication program that explains the container labels, labeling system, and use and location of the Safety Data Sheets.

III. Responsibilities

A. Director of Environmental Health and Safety & Risk Management –maintain and implement the campus-wide Hazard Communication program including the written plan, chemical inventory, SDS, and training for applicable departments.
B. Employees – complete required training to understand the hazards of working with chemicals, maintain labels on containers, understand and know the location of SDS for the department, and know the location of the departmental chemical inventory.

IV. Definitions

A. Container – any bag, barrel, bottle, box, can, cylinder, drum, reaction, vessel, storage tank, or the like that contains a hazardous chemical. Pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle are not considered to be containers.
B. Hazardous chemical – any chemical which is classified as a physical or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazardous not otherwise classified.
C. Hazard category – the division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories.
D. Hazard class – the nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

E. 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 addressed in this section.
F. 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.
G. Hazard warning – 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, o f the chemical(s) in the container(s).
H. 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 of 29 CFR 1910.1200 – Health Hazard Criteria.
I. Label – an appropriate group of written, printed, or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.
J. Label element – the specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category.
K. 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. See Appendix B to 29 CFR 1910.1200 – Physical Hazard Criteria.
L. 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 standard for application to a hazard category.
M. Precautionary statement – 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.
N. Product identifier – 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.
O. Safety data sheet (SDS) – written or printed material concerning a hazardous chemical that is prepared by the chemical manufacturer or importer in accordance with the standard's requirements.
P. Signal word – a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are "danger" and "warning." "Danger" is used for the more sever hazards, while "warning" is used for the less severe.

V. Hazard Classification

Chemical manufacturers, importers, and distributors must evaluate the hazards associated with their chemicals and classify the chemicals according to Appendix A (health hazards) and Appendix B (physical hazards) of the standard. Each container of hazardous chemicals leaving the workplace must be labeled, tagged, or marked with

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram(s)
- Precautionary statements(s)
- Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

This information must be in accordance with Appendix C of the standard.

Labels must be revised within six months when new significant information regarding the hazards of the chemical is known.

VI. Written Hazard Communication Program

Employers must develop, implement, and maintain a written hazard communication program. The program must include methods of compliance that include

- the criteria for labels and other forms of warning
- safety data sheets
- employee information and training
- location of the inventory of hazardous chemicals
- methods used to inform employees of the hazards of non-routine tasks

This document constitutes the Ursinus College written Hazard Communication plan. Copies of this plan are in the Facilities Services Safety Manual, on the college website, and may be obtained from the Environmental Health and Safety & Risk Management Office.

A. **Chemical Inventory** – the list of hazardous chemicals known to be present in the workplace using the product identifier referenced on the safety data sheet must be maintained and readily available, upon request, to employees.

   The Director of Environmental Health and Safety & Risk Management ensures all applicable departments maintain an up-to-date inventory of hazardous chemicals with at least annual revisions.

   While this standard does not require the laboratories to maintain a chemical inventory, the Ursinus College Chemical Hygiene Plan requires a chemical inventory to be maintained.

   Each affected department chemical inventory is maintained electronically through the Chimera program. Employee access is via a link on the Environmental Health and Safety

& Risk Management webpage or QR code. Appendix A lists the persons responsible for maintaining the chemical inventory for affected departments and Appendix B lists the instructions for accessing the college SDS.

B. **Labeling and Other Forms of Warning**

Chemical manufacturers, employers, and employees have labeling responsibilities.

1. Chemical manufacturers labeling requirements are discussed in the "Hazard Classification" section above.
2. Employers
   a. Must ensure that containers of hazardous chemicals are labeled, tagged, or marked as listed under the hazards classification section above or with 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 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 chemicals.
   b. 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 providing the alternative method meets the labeling requirements of the standard. Labeling of portable containers with hazardous chemicals if used immediately by the same employee who transferred the chemical is not required.
   c. May not remove or deface existing labels on incoming containers of hazardous chemicals unless immediately marked with the required information
   d. Must ensure that labels are legible, in English, and prominently displayed on the container.
   e. Must revise labels within six months when new significant information regarding the hazards of the chemical is known.
3. Employees
   a. Must use and preserve the labels already on containers when purchased as provided by the manufacturer or distributor.
   b. Must properly label secondary containers if transferring a material from a labeled container to another container, unless that container is a portable container, which is intended only for the immediate use by the employee who performs the transfer.
   c. Must those secondary container labels as required on all containers. If a label is accidentally removed or defaced, the container shall be immediately relabeled with the required information.

C. **Safety Data Sheets**

1. Chemical manufacturers/importers must provide a safety data sheet (SDS) for each hazardous chemical produced or imported.
2. Employers must maintain copies of SDS in the workplace for each hazardous chemical they use and ensure SDS are readily available to all affected employees. The Director of Environmental Health and Safety & Risk Management works with the designated employees in art, facilities, HEP, sciences, and theater to maintain SDS. SDS shall be retained for at least 30 years.
3. SDS must be in English and contain the following information:

a. Section 1 - Identification
b. Section 2 – Hazard(s) identification
c. Section 3 – Composition/Information on ingredients
d. Section 4 – First-aid measures
e. Section 5 - Fire-fighting measures
f. Section 6 – Accidental release measures
g. Section 7 – Handling and storage
h. Section 8 – Exposure controls/personal protection
i. Section 9 – Physical and chemical properties
j. Section 10- Stability and reactivity
k. Section 11 – Toxicological information
l. Section 12 – Ecological information
m. Section 13 – Disposal considerations
n. Section 14 – Transport information
o. Section 15 – Regulatory information
p. Section 16 – Other information including date of preparation or last revision

Copies of SDS in other languages may be maintained as applicable.

D. Employee Information and Training

All employees shall receive effective information and training on hazardous chemicals in their work area upon initial assignment and whenever a new chemical hazard is introduced into the work area. Initial training will be provided by the Director of Environmental Health and Safety & Risk Management or designee. The information and training provided may be designed to cover hazard categories or specific chemicals. Information required to be covered in the training includes

1. Specific locations and operations where hazardous chemicals are used.
2. Location and availability of the written hazard communication program
3. Location of the hazardous chemical inventory
4. Use and location of the safety data sheets.
5. Methods and observations to detect the presence or release of hazardous chemicals. See Appendix C.
6. Physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the workplace.
7. Measures employees can take to protect themselves from the hazards, including specific procedures implemented such as appropriate work practices, emergency procedures, and personal protective equipment to be used. Appendix D describes general safety measures for some hazard categories.
8. Details of the College's hazardous communication program including
    a. Explanation of the labels on received containers
    b. Labeling system used
    c. Safety Data Sheets – order of information and how to obtain and use the appropriate hazard information

Department Chairpersons or Supervisors may provide additional training for new hazards.

E. **Contractors –** The Director of Facilities Services is responsible for ensuring that outside contractors are informed of the hazardous substances to which they may be exposed to at the job site by providing copies of the SDS for the chemicals and protective measures to

be employed to reduce the possibility of exposure. In addition, if an Ursinus employee uses a hazardous chemical that may expose employees of cleaning or dining services, access to the SDS as well as information on the labeling system and precautionary measures to take must be provided to those employees.

F. **Recordkeeping**

1. The Director of Environmental Health and Safety & Risk Management will maintain all training records including sign-in sheets, quizzes, and the topics covered for the duration of the employee's time at the college.
2. In accordance with 29 CFR 1910.1020 all employee exposure and medical records must be retained for employment plus 30 years.

G. Dates

1. May 25, 2012 – revise standard effective
2. December 1, 2013 – all affected employees trained in new label requirements and SDS format
3. June 1, 2015 – Chemical manufacturers/importers/distributors and employers must comply with the modified provisions of the standard.

H. **References**

1. UCIC Accident and Illness Prevention Program Manual Guide, October 24, 2007, edition.
2. 29 CFR 1910.1200, OSHA Hazard Communication Standard, www.OSHA.gov

Appendix A

SDS and Chemical Inventories

All affected departments maintain an electronic chemical inventory with access to Safety Data Sheets (SDS). The laboratory manager/research assistant barcode incoming chemicals and enter them into the Chimera inventory system and ensure a SDS is attached to each chemical. All other departments with hazardous chemicals track inventory through use of UPC or product code numbers. Links to some chemical manufacturer SDS websites are listed on the next page.

Each department performs an annual inventory check. Chemicals that are barcoded are removed from the system when the containers are emptied. All other departments remove depleted chemical products that use UPC or product code numbers from the inventory annually.

Department	Location
Art	Maintained by Art Department Administrative Assistant and Environmental Health and Safety & Risk Management Office
Biology	Maintained by Laboratory Manager
Chemistry	Maintained by Laboratory Manager
Facilities Services	Maintained Environmental Health and Safety & Risk Management Office
Photography	Maintained by Art Department Administrative Assistant and Environmental Health and Safety & Risk Management Office
Theater & Dance	Maintained by the Technical Director and Environmental Health and Safety & Risk Management Office

Appendix A

SDS and Chemical Inventories

Addition Safety Data Sheet Resources:

Sciences	**Art/Facilities/Theater**
Acros Organics	Ace Hardware (SDS access under product specifications)
Alfa Aesar	Acrymax Technologies
Ameresco	Akzo Nobel Paints LLC (Flood)
Avantor Performance Materials (JT Baker, Mallinckrodt)	American Clay Co., Inc.
BD Diagnostics	BASD Corporation
BDH (VWR)	Basic Coatings, Inc.
Bio-Rad	Benjamin Moore and Co.
Cambridge Isotopes Laboratories	Bondo Corporation
Carolina Biological	Dick Blick
Dow Corning	Gamblin Artists Colors
EMD Chemicals (EMD Millipore)	Gamblin Artists Colors (printmaking)
Fisher Scientific	Krylon Spray Paints - search by product number (4–5-digit number or the 4 numbers one removed from the end of the UPC code. UPC = "072450402330 2"
MP Biomedicals	Loctite Corporation
	Montana Gold Spray Paints
Sigma Aldrich (Fluka)	National Refrigerants, Inc.
Spectrum Chemical	Rust-oleum Products - put in the UPC in the search box and then click on the correct color
ThermoFisherScientific	Valspar Paints - put in the UPC in the search box and then click on the correct color
Thomas Scientific	
Ward's Science	

Appendix B

Accessing Ursinus College Safety Data Sheets

1. Using your phone, scan the QR code below and enter the name, product number, or name of product and manufacturer of the chemical (download a QR reader or barcode scanner App on your phone or iPad).

2. Using a computer, click on this link https://www.ursinus.edu/offices/environmental-health-and-safety/laboratory-safety/
3. OR using a computer, go to
   - www.ursinus.edu
   - In search box, type “safety data sheets”
   - In middle of page, click on “safety data sheets”
   - Enter the UPC code, product code, or name of the product and manufacturer

Questions? Contact the Environmental Health and Safety & Risk Management Office at cmcmillin@ursinus.edu or ext. 3221.

Appendix C

Detecting Exposure Hazards

Some chemical hazards may be detected by sight, smell, and/or taste. Solids and liquids are easily seen but most airborne chemicals (gases, mists, and vapors) are not. However, one can smell some invisible airborne chemicals and can taste others. Employees should know whether one can see, smell or taste chemicals used in their work area, at what levels one can detect the chemical(s), and whether senses become numb to the odor or taste. For example, carbon monoxide is odorless and tasteless. Consult the label and the safety data sheet for this information.

Even though one may not be able to sense some chemical hazards, **one may be able to spot equipment failures that warn of exposure**. All employees should be alert to failure of local exhaust systems, damaged containers, and leaks and holes in personal protective equipment. Appropriate personal protective equipment such as eye protection and gloves should be worn when handling hazardous materials.

Finally, **some exposures go undetected**. The presence of medical symptoms such as headaches, nausea, dizziness, or coughing may be an indication of the occurrence of exposure. If the same symptom is present in a large percent of the workplace population, the onset of the symptom was sudden, and it worsened during the work period, the likelihood of workplace exposure is considerable. Medical attention should be sought if symptoms are thought to be work related.

Contact the Environmental Health and Safety & Risk Management Office at 610-409-3221 for assistance.

Appendix D

General Safe Use Practices of Hazardous Chemicals

Prior to using any hazardous chemicals, always review the chemical container label and the SDS for additional safety information. Employees working in the laboratories should consult the Chemical Hygiene Plan for additional information.

Flammable Chemicals:

Flame – flammables, pyrophorics, self-heating, emits flammable gas, self-reactives, or organic peroxides

All flammable chemicals shall be stored and used away from ignition sources such as open flames, cigarettes, and sparking tools. The preferred storage site for flammables is a dedicated flammable storage cabinet. All vessels containing flammable chemicals shall be grounded in accordance with OSHA and NFPA regulations and codes.

Appropriate fire extinguishing material shall be kept available for fire emergencies. At a minimum, an appropriate type of fire extinguisher for the type of material should be present. Consult the SDS for flammable chemicals used in the laboratory setting.

Examples of common flammable chemicals found in art, facilities, and theater include aerosol spray paints, wood finishes, and aerosol spray paints. Acetone, ethanol, isopropanol, and methanol are commonly found in the laboratories.

Corrosive Chemicals:

Corrosion – skin corrosion/burns, eye damage, and corrosive to metals

All corrosive chemicals shall be managed to prevent spills. Employees using corrosives should be protected with rubber gloves, goggles, and other appropriate protective equipment.

Examples of common corrosive chemicals found in facilities include muriatic acid (hydrochloric acid). Acetic acid, hydrochloric acid, nitric acid, potassium hydroxide, sodium hydroxide, and sulfuric acid are commonly found in the laboratories.

Toxic Chemicals:

Health Hazard – carcinogen, mutagenicity, reproductive toxicity, respiratory sensitizer, target organ toxicity, and aspiration toxicity

Exclamation Mark – irritant to skin and eye, skin sensitizer, acute toxicity (harmful), narcotic effects, respiratory tract irritant, hazardous to ozone layer

Skull and Crossbones - acute toxicity (fatal or toxic)

All toxic chemicals will be managed per OSHA's PEL (permissible exposure limits) guidelines or ACGIH TLV (threshold limit values) airborne guidelines. Consult the SDS for the hazardous material to ascertain the proper method of handling and the appropriate personal protective equipment.

Examples of toxic chemicals found in art, facilities, and theater include paints, paint thinners, polyurethane products, and stains. Acrylamide, benzene, chloroform, formaldehyde, methyl chloride, and phenol are commonly found in the laboratories.

Reactive Chemicals:

Exploding Bomb – explosives, self-reactives, and organic peroxides

Reactive chemicals produce hazardous situations when brought into contact with other chemicals. Thus, there should be no mixing of chemicals unless the supervisor gives specific instructions as to order of mixing and the amounts. The SDS should be checked for special mixing hazards. Some chemicals when mixed with water produce hazardous materials.

Examples of small quantities of reactive chemicals found in the laboratories include peracetic acid, pyrazine, and sodium azide.

Oxidizers:

Flame Over Circle - oxidizers

Oxidizers are chemicals that create a persistent fire when mixed with flammable or combustible material. Therefore, they should be segregated from all flammable and combustible materials including solvents, cleaners, paint, rags, paper, and wood.

Examples of oxidizers found in art, facilities, and theater include oxygen gas, bleach, and hydrogen peroxide. Nitrates (i.e., ammonium nitrate, potassium nitrate), hydrogen peroxide, nitric acid, potassium iodate, and potassium permanganate are found in the laboratories.

Compressed Gases:

Gas Cylinder – gases under pressure

To prevent accidental damage to the cylinder and/or accidental release of the gaseous contents, cylinders shall be secured to walls or benches when stationary and shall not be moved unless strapped to a cart with the valve protector in place. Consult the "Compressed Gases" policy located in the Facilities Safety Manual, the Chemical Hygiene Plan, or contact the Environmental Health and Safety & Risk Management Office for a copy.

All areas except for art contain compressed gas cylinders including acetylene, argon, nitrogen, and oxygen.

Paint:

Paint and painting supplies often contain a variety of hazardous substances such as flammable solvents and toxic ingredients. Respiratory protection and/or adequate ventilation must always be used when working with paints. If it is determined a respirator is needed, notify the Environmental Health and Safety & Risk Management Office for assistance.