University of New Haven

HAZARDOUS MATERIALS COMMUNICATION PROGRAM

Prepared By:
Triumvirate Environmental

Developed: September 2011
Revised: June 2015

Program Approval

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Associate Vice President of Public Safety & Administrative Services Date

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1.0 Overview

This Hazardous Materials Communication Program (Program) is designed to ensure that any hazardous chemicals and materials present on the University of New Haven campus are identified and that all students and employees are provided with a basic awareness of the information that they need in order to protect themselves, other employees, the public and the environment from potential risks related to the use and management of those chemicals and materials.

1.1 Purpose

The purpose of the Program is to provide guidance to University of New Haven employees and students for evaluating the potential risks of hazardous chemicals and materials on campus and to provide information concerning potential hazards to the environment. The Program complies with the requirements of OSHA's Hazard Communication Standard (29 CFR § 1910.1200), commonly known as the "Employee Right-to-Know Law."

1.2 Scope

This standard pre-empts all other existing legal requirements regarding the subject. Under requirements of this safety standard, all chemicals that are produced, imported or are otherwise used at the University of New Haven are reviewed, and information relative to the hazards of these chemicals is communicated to all affected employees.

In addition to chemical hazards, this plan sets forth to address additional hazards that may be present at the University including asbestos and mold.

Employees engaged in the handling of hazardous chemicals have the right to know of, and to be informed by the University of New Haven as to, the chemical and physical hazards that are inherent to their job duties. They also have the right to be informed of the proper methods for protecting themselves from these hazards. Employees with questions concerning the use of the written Program, or questions concerning the information contained within it, will have those questions answered by the Associate Vice President of Public Safety.

Students having questions on asbestos or mold are asked to contact the Director of Facilities office at 203.932.7087.

2.0 Roles and Responsibilities

2.1 Associate Vice President of Public Safety and Administrative Services

- Responsible for scheduling training on the Program in accordance with 29 CFR § 1910.1200 with the Department Chair, faculty, contractors, custodial services and Buildings and Grounds staff;
- Responsible for assuring safe practices are implemented and practiced within the laboratory setting;
- Review the Program for effectiveness in cooperation with the Chemistry, Biology, Forensic Sciences and Dental department chairs and amend as necessary at least annually; and
- Assure that students have access to the information contained in sections 4.14 and 4.15.

2.2 Associate Vice President for Facilities

- Assure that all facility department staff adheres to this policy and the procedures outlined within.

2.3 Department Chair (Chemistry, Biology, Forensics, Dental and Mechanical Engineering)

- Responsible for assuring the Hazardous Materials Communication Safety plan is followed within laboratories under their control;
- Assure laboratory staff attend at least annually a laboratory specific training on the Program and its contents;
    - Staff are inclusive of students, volunteers, minors and researchers;
- Implement safe laboratory practices and engineering controls to minimize the potential exposure to hazardous chemicals;
- Ensure that equipment and protective devices are available and in working order, and that appropriate training has been provided;
- Attend necessary trainings;
- Review and understand the Program and applicable laboratory specific procedures in their entirety before beginning work in the laboratory or with hazardous chemicals; and
- In cooperation with the Associate Vice President of Public Safety, review the Program for effectiveness and amend as necessary at least annually.

2.4 Managers, Supervisors, Lab Managers and Employees

- Review and understand the Program;
- Ensure that hazardous chemical containers are labeled properly;
- Read and understand Safety Data Sheets (SDSs) for the chemicals used; and
- Responsible for following all safe work practices and using proper precautions required by this Program.

3.0 Hazard Materials Communication Safety Program

3.1 Location

This Program is available to all employees, students and contractors for review and a copy is located in the following area(s): office of the Associate Vice President of Public Safety, Biology main office, Chemistry main office, Forensic Sciences main office, Custodial Services main offices in Maxcy Hall and the Building and Grounds work shop area. The Program can also be accessed on the University's Health and Safety website.

The written program will be made available, upon request, to the Assistant Secretary and the Director of OSHA. A paper copy of this Program should be kept in a designated location in each space that uses or stores hazardous chemicals, or where hazardous materials are present.

3.2 Review

The Associate Vice President of Public Safety will annually review and evaluate this Program and amend as necessary.

4.0 Categories of Hazardous Chemicals and Materials

The department managers shall ensure that all employees are aware of the locations, hazards and appropriate control measures for work involving hazardous chemicals. In some cases, specific procedures may be required for working with highly hazardous materials. Review the SDS for specific handling and storage requirements of hazardous chemicals. Some specific hazards that may be present in various work areas and buildings at the University of New Haven are listed below.

4.1 Allergens and Sensitizers

A chemical allergy is an adverse reaction by the immune system to a chemical. Allergic reactions result from previous sensitization to a chemical or a structurally similar chemical. Once sensitization occurs, allergic reactions can result from exposure to extremely low doses of the chemical. Allergic reactions can be immediate, occurring a few minutes after an exposure. Anaphylactic shock is a severe immediate allergic reaction that can result in death if not treated quickly. Allergic reactions can also be delayed, taking hours or even days to develop. It is important to recognize that a delayed chemical allergy can occur after the chemical has been removed. Examples of substances that may cause allergic reactions include formaldehyde, various isocyanates and certain phenol derivatives.

4.2 Asphyxiants

Asphyxiants are substances that interfere with the transport of an adequate supply of oxygen to the

vital organs of the body. Simple asphyxiants are substances that displace oxygen from the air being breathed to such an extent that adverse effects result. Acetylene, carbon dioxide, argon, helium, ethane, nitrogen, and methane are common asphyxiants. It is important to recognize that even chemically inert and biologically benign substances can be extremely dangerous under certain circumstances such as carbon monoxide.

4.3 Compressed Gases

Gas cylinders contain either compressed liquids or gases. Gas cylinders represent the most insidious hazard, as puncture, heat, faulty valves, pressure or regulators may result in a rapid release of the contents. The following safety considerations should be implemented where applicable:

- The cylinder contents must be clearly identifiable.
- Handle cylinders carefully and do not roll, slide or drop. Use a cart or hand truck to transport.
- Do not lift a cylinder by its cap.
- Secure all cylinders while in storage, transport, or use.
- Never tamper with cylinder valves, force connections or use homemade adapters. Use only approved equipment. Never repair or alter cylinders, valves or safety relief devices.
- Only use a regulator compatible with the cylinder contents.
- Close the cylinder valve when not in use.
- When empty, turn off the cylinder valve and label the cylinder as empty. Store separately from full cylinders.
- Store cylinders in a well ventilated area away from ignition sources, heat, flames and flammable chemicals.
- Check for gas leaks using soapy water around the connections.
- Do not store flammable gas cylinders with oxidizers such as nitrous oxide or oxygen. They must be separated by a minimum of 20 ft. or a 5 foot fire wall.

4.4 Corrosive Chemicals

The Resource Conservation and Recovery Act (RCRA) defines a corrosive chemical as a liquid with a pH ≤2 or >12.5. Acids and bases can cause severe tissue damage depending on the corrosivity of the chemical. The primary means of protection from corrosive chemicals is the use of gloves, goggles, face shields, aprons, lab coats and other chemical resistant clothing. Exercise extreme caution when handling corrosive chemicals. The following safety considerations should be implemented where applicable:

- Transport acids and bases in a bottle carrier or cart. Do not handle by the neck alone; support the weight of the bottle from the bottom when handling or pouring.
- Do not store acid and bases with flammable liquids or oxidizing chemicals.

- Isolate corrosive chemicals from incompatible chemicals.
- Reference the chemical's SDS for proper handling, PPE and storage requirements.
- If an acid or base comes in contact with your skin or clothing, thoroughly wash the affected areas utilizing the safety showers or eyewash units and notify your department manager or laboratory manager.

4.5 Cryogenic Liquids

Cryogenic liquids are liquefied gases that are kept in their liquid state at very low temperatures and are associated with various hazards including: extreme cold, asphyxiation, explosion, cold contact burns, and toxicity. The most common cryogenic liquid at the University of New Haven is liquid nitrogen. Employees should be thoroughly trained on the hazards and the proper steps to avoid them. Training should include emergency procedures, operation of equipment, safety devices, appropriate engineering controls, knowledge of the properties of the materials used and personal protective equipment required. Insulated gloves should always be worn when handling anything that comes into contact with cryogenic liquids or the vapors. Considerations must be made to prevent cryogenic material from contacting skin. Clothing such as a lab coat, gloves, pants, closed toed shoes, safety glasses, goggles and face shields should be worn.

4.6 Flammable and Combustible Chemicals

Flammable chemicals are considered to be liquids with a flashpoint below 100 °F and solid materials that readily sustain combustion. Liquids with a flashpoint between 100 °F and 200 °F are generally classified as combustible; the same basic procedures should be applied when handling flammable or combustible liquids.

- Do not allow smoking or other sources of open flames in areas where flammable chemicals are used.
- Know the location fire extinguishers, fire alarms, and emergency exits in the work area.
- Do not store flammable liquids in domestic-type refrigerators. Use only refrigerators rated for flammables.
- Do not store flammables with oxidizing agents (e.g., nitric, perchloric, and sulfuric acids).
- Do not expose flammable liquids to potential sources of ignition such as electrical equipment, heat, burners, or open flames.
- To prevent accidental electrical charge, the use of bonding and grounding equipment should be used whenever applicable. The use of non-sparking tools can prevent an ignition source.
- Store flammable liquids in an approved fire rated flammable storage cabinet.
- Do not store flammable liquids on the floor, unless protected by secondary containment.
- Minimize the amount of flammable liquids that are in use, being stored, and that are generated as

wastes.

- Storage of flammable liquids greater than 10 gallons within a work area must be in an approved and labeled flammable storage cabinet.
- The SDS must be reviewed for additional safety requirements and precautions.

4.7 Irritants

An irritant is a chemical, which is not corrosive, but causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A wide variety of organic and inorganic chemicals are irritants; thus, skin contact with all chemicals should be avoided. Use a properly functioning chemical fume hood when handling irritants that can be inhaled. At minimum, safety glasses, lab coat, long pants, gloves and closed toed shoes should be worn.

4.8 Organic Peroxides

Organic peroxides are hazardous because of their extreme sensitivity to shock, sparks, heat, light, strong oxidizing and reducing agents, and other forms of detonation. Organic peroxides may cause fire, create explosion hazards, and may be toxic or corrosive. Some organic peroxides are dangerously reactive, decomposing very rapidly or explosively if they are exposed to slight heat, friction, mechanical shock or contamination with incompatible materials. Precautions for handling peroxides should include the following:

- Limit the quantity of peroxides.
- Do not return unused peroxides to the container.
- Clean up all spills immediately. Solutions of peroxides can be absorbed using vermiculite or other absorbing material.
- Do not permit smoking, open flames, and other sources of heat near peroxides. Areas should be labeled that contain peroxides so that this hazard is evident.
- Avoid friction, grinding, and other forms of impact near peroxides, especially solid peroxides. Glass containers that have screw-cap lids or glass stoppers should not be used. Polyethylene bottles that have screw-cap lids may be used.
- Isolate from incompatible materials such as strong acids and bases, flammable and combustible liquids, and reducing agents.

4.9 Oxidizers

Oxidizers are chemicals other than blasting agents or explosives as defined in § 1910.109(a), that initiate or promote combustion in other materials, causing fire either of itself or through the release of oxygen or other gases. Examples include perchloric acid, potassium persulfate and lead nitrate. Precautions for handling oxidizers should include the following:

- Minimize the amount of oxidizers used and stored.

- Isolate from incompatible chemicals (e.g., organics, flammable, dehydrating, or reducing agents).
- Do not store oxidizers in wooden cabinets or on wooden shelves.
- Do not return unused material to the original container.
- Store in a tightly closed container and in a cool, dry, ventilated area.

4.10 Pyrophoric Chemicals

Pyrophoric chemicals are extremely reactive toward oxygen and/or water, and must never be exposed to the atmosphere. Examples include sodium hydride and magnesium. Exposure of these chemicals to the air could result in spontaneous combustion, which could cause serious burns or other injuries to the person handling the chemical or others in the immediate area. In addition, all combustible materials, including paper products, should not be allowed to come in contact with any pyrophorics at any time. Pyrophorics can be handled and stored safely as long as all exposure to atmospheric oxygen and moisture is avoided. Solids must be transferred under an inert atmosphere in an efficient glove box. Glass bottles of pyrophorics should not be handled or stored unprotected. The metal container shipped with each bottle should be retained as a protective container for each bottle for transporting and storage.

4.11 Reproductive Toxins

Reproductive toxins are chemicals which affect the reproductive capabilities including chromosomal damage and effects on fetuses. Reproductive toxins have adverse effects on various aspects of reproduction, including fertility, gestation, lactation, and general reproductive performance. Reproductive toxins can affect both men and women. Reproductive toxins include lead, carbon disulfide and mercury.

4.12 Toxic Chemicals

Toxic is defined by OSHA 29 CFR 1910.1200 as a chemical which falls in any of these three categories:

- A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
- A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to

albino rats weighing between 200 and 300 grams each.

4.13 Unknown Chemicals

Unknown chemicals or those, for which complete physical and chemicals hazards are not known, must be assumed to be hazardous and highly toxic. Appropriate PPE and engineering controls should be utilized.

4.14 Asbestos

Asbestos was used widely in building products until the 1980s. Because of the age of some of the University's buildings, the University of New Haven acknowledges that asbestos containing materials are present in a number of residence halls and other campus buildings. As long as these materials are in good condition, and remain undisturbed, they do not present a health risk to residents and others in the immediate area.

Asbestos is a mineral fiber that has been used commonly in a variety of building construction materials for insulation and as a fire-retardant. Because of its fiber strength and heat resistant properties, asbestos has been used for a wide range of manufactured goods, including building materials. Materials containing asbestos at the University of New Haven may be pipe insulation, ceiling tiles, flooring tiles, wall coatings and boiler components.

Unsampled materials in buildings built prior to 1981 are presumed to contain asbestos until sampling and analysis indicates otherwise. The University of New Haven's facility department maintains an asbestos containment compound that prevents the release of asbestos fibers into the air. If you notice any damaged building materials within your residence hall, room or in other areas throughout the campus, please contact the Director of Facilities office at 203.932.7087. All damaged building material(s) will be repaired.

The University asks that you do not:

- Scrape, damage or in any way disturb building materials; and
- Do not tape, tack, nail or glue any posters, papers, pictures or other items to the ceilings or walls. Alternatively, you may use University approved adhesive putty to attach posters to walls.

The University of New Haven has a capital improvement plan in place that includes identification and removal of asbestos containing materials from the affected residence halls and other buildings on campus.

If you should have additional questions concerning this information please contact the Director of Facilities office at 203.932.7087.

4.15 Mold

Molds are part of the natural environment. Molds are fungi that can be found anywhere - inside or outside - throughout the year. About 1,000 species of mold can be found in the United States, with more than 100,000 known species worldwide.

Molds can grow on virtually any substance, as long as moisture or water, oxygen and an organic source are present. Molds reproduce by creating tiny spores (viable seeds) that usually cannot be seen without magnification. Mold spores continually float through the indoor and outdoor air.

All molds share the characteristic of being able to grow without sunlight; mold needs only a viable seed (spore), a nutrient source, moisture and the right temperature to proliferate.

Moisture control and adequate ventilation are the keys to mold control. All University staff and students shall act promptly in reporting water leaks to the building and grounds department. All water leaks at the University should be identified, stopped and cleaned up as soon as possible. If you suspect mold in your work area, residence hall and/or common area or have questions regarding mold please contact the Director of Facilities office at 203.932.7087.

If mold growth is observed or if musty odors are detected, contact the facilities office. Do not disturb any visible mold growth without consulting with the facility office since doing so may cause unnecessary contamination to adjacent surfaces and objects and cause unwanted adverse health effects. If you suspect mold in your work area, residence hall and/or common area or have questions regarding mold please contact the Director of Facilities office at 203.932.7087.

5.0 Safety Data Sheets (SDSs)

The University of New Haven maintains copies of SDSs in the workplace for each hazardous chemical in use at the facility. SDSs must be readily available for all employees and will contain the identity on the chemical container. SDS must be retained 30 years after use has ceased. Each SDS must be in English and contain at least the following information:

- Identity used on the label
- Its chemical and common names
- List of ingredients if a mixture
- Physical and chemical characteristics
- Physical and health hazards
- Signs and symptoms of exposures
- OSHA permissible exposure limit and other exposure limit values

- If it is listed in the National Toxicology Program (NTP) annual report on carcinogens or a potential carcinogen in the International Agency for Research on Cancer (IARC), or by OSHA
- Safe handling and use precautions
- Control measures
- Emergency and first aid measures
- Date of preparation and the most recent change
- Manufacturer information

If an SDS is not provided with a shipment, the department manager must obtain one from the chemical manufacturer as soon as possible. The University of New Haven has purchased the rights to MSDSOnline, an electronic inventory system of SDSs. University faculty, staff and students will be trained how to utilize this system when it is fully implemented.

5.1 Routes of Entry

Exposure occurs when an employee is exposed to a hazardous chemical in the workplace via any route of entry. The most common routes of entry by which chemicals enter the body include inhalation, ingestion, skin contact (absorption), and injection.

Inhalation is one of the quickest ways to spread toxins throughout the body, as the lungs readily disperse many substances when they recharge the blood with oxygen. Ingestion has long been considered to be one of the least likely means of exposure in the workplace. However, published information indicates that significant worker exposure may occur when gum or tobacco is chewed, or food is eaten in the presence of toxic vapors.

5.2 Signs and Symptoms of Exposure

The signs and symptoms of exposure are the detectable adverse effects of a chemical on the body. Examples include eye irritation, dizziness, fatigue, nausea, skin rash, shortness of breath, or headache. Some signs and symptoms may be of a highly technical nature referencing medical terminology not immediately recognizable such as polyserositis, dysneuria and ulaganactesis. A good medical dictionary should be handy for understanding this element of the health hazard section of SDSs.

6.0 Labels and Other Forms of Warning

All containers of hazardous chemicals must be labeled with the identity of the material and appropriate manufacturer information, hazard warnings, statements and pictograms following the Globally Harmonized System. If the material is subsequently transferred by employees from a labeled container to another container, employees will have to label that container, unless it is subject to the portable container exemption (1910.1200(f) (7)). The University of New Haven 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. The identity for the material and appropriate hazard warnings must be on the label. The identity is any term which appears on the label, the SDS, and the list of chemicals and thus links these three sources of information.

7.0 Non-Routine Tasks

A non-routine task is one which the employee does not routinely perform and or has not previously been trained. An example of a non-routine task would be when an employee is assigned to clean a tank or enter a confined space. Prior to beginning any non-routine task involving actual or potential exposure to hazardous chemicals, the University of New Haven must inform employees of the hazards present and be given training on work practices and necessary personal protective equipment.

8.0 Multi-Employer Workplace

8.1 University of New Haven Information to Contractors

The University of New Haven is responsible for providing contractors with the following information:

- List of hazardous chemicals to which employees of other employer(s) may be exposed to
- Information about the labeling system
- Any precautionary measures
- The location of SDSs
- The provisions of this Program

8.2 Contractor information to the University of New Haven

The University of New Haven is responsible for obtaining information from contractors on all hazardous chemicals to which University employees may be exposed as a result of the contractor's work at the University of New Haven.

Contractors who bring hazardous chemicals on-site at the University of New Haven must comply with the following:

- Supply an inventory of the hazardous chemicals and their applicable SDSs to the Director of Facilities.
- Ensure all chemical containers are properly labeled.
- Remove all unused chemicals after the project is complete.
- Arrange for proper disposal of all hazardous and non-hazardous wastes by contacting the Associate Vice President of Public Safety or the Director of Facilities.

9.0 Chemical Mixtures

Those working with mixtures of chemicals at the University must determine their hazards. If the mixture has not been tested, then the mixture must be assumed to present the same health hazards as the components which comprises one percent by volume or weight 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.

10.0 Employee Information and Training

Prior to starting work with hazardous chemicals or at the time of employment, each employee will attend a Hazard Communication training where they will receive information on the following topics:

- Policies and procedures related to the Hazard Communication Standard
- Location of the written Hazard Communication Program
- Globally Harmonized System updates
- How to read and interpret a SDS
- Location of SDSs
- Physical and health hazards of hazardous substances in their work area
- Methods and observation techniques to determine the presence or release of hazardous chemicals
- Work practices that may result in exposure
- How to prevent or reduce exposure to hazardous substances
- Personal protective equipment
- Procedures to follow if exposure occurs

Supplemental or follow-up training will be provided if the University of New Haven has reason to believe that employees do not understand the program or any of its elements or there are changes in the workplace which involve chemicals or chemical-related work practices not previously in training.