

CHEMICAL HYGIENE PLAN

FOR

HERITAGE UNIVERSITY

IMPLEMENTATION DATE

July 20, 2010

Reviewed: August 22 2024

29 CFR 1910.1450

REGULATORY STATUTE

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University President

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CHEMICAL HYGIENE OFFICER / Educational Lab Technician

FORWARD

This plan applies to all employees of this facility engaged in the laboratory use of hazardous chemicals. Effective implementation requires a written program for job safety and health that is endorsed and advocated by the highest levels of management within this company, and that outlines our goals and plans. This written plan will be communicated to all required personnel. It is designed to establish clear goals, and objectives to provide a safe working environment.

President
Heritage University

Date

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DATE: July 20, 2010

SUBJECT: Chemical Hygiene Plan for Heritage University.

REGULATORY STANDARDS: OSHA - 29 CFR 1910.1450
OSHA- 29 CFR-1910
NFPA - 45, Laboratory Fire Protection

BASIS: Laboratory workers are routinely exposed to hazardous chemicals such as acetone, carbon monoxide, formaldehyde, hydrogen sulfide, mercury, nitric acid and xylene. Many accidents and injuries occur annually in laboratories, resulting in chemical-related illnesses ranging from skin and eye irritation to fatal pulmonary edema. This poses a serious problem for exposed workers and their employer. This plan establishes uniform requirements to ensure that the hazards associated with work our laboratory is evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

GENERAL: Heritage University will ensure that all potential hazards within this laboratory are evaluated. This plan is intended to address comprehensively the issues of; evaluating and identifying potential hazards, evaluating engineering controls, work practices, administrative controls, medical management, training, disposal, and establishing appropriate procedures.

WRITTEN PROGRAM. Heritage University will review and evaluate this plan an annual basis, or when the following conditions are met:

- When regulatory changes occur that prompt revision of this plan.
- When facility operational changes occur that require a revision of this document.
- Anytime there is question concerning the validity of this plan.

APPLICABILITY: The Laboratory Standard applies to all employees engaged in the laboratory use of hazardous chemicals. Laboratory use of hazardous chemicals is defined as the use or handling of chemicals in which all of the following conditions are met:

- Chemical work is carried out on a laboratory scale.
- Multiple chemical procedures or chemicals are used where the procedures are not part of or simulating a production process.
- Protective laboratory practices and equipment are used.

Heritage University Chemical Hygiene Program

University Policy Statement

The Occupational Safety and Health Act of 1970 clearly states our common goal of safe and healthful working conditions. The safety and health of our employees continues to be the first consideration in the operation of this laboratory.

Safety and health in our education must be a part of every operation. Without question it is every employee's responsibility at all levels.

It is the intent of this laboratory to comply with all laws. To do this we must constantly be aware of conditions in all work areas that can produce injuries. No employee is required to work at a job he or she knows is not safe or healthful. Your cooperation in detecting hazards and, in turn, controlling them is a condition of your employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct.

The personal safety and health of each employee of this laboratory is of primary importance. The prevention of occupationally-induced injuries, illnesses, and chemical exposure is of such consequence that it will be given precedence over operating productivity whenever necessary. To the greatest degree possible, management will provide all mechanical and physical facilities required for personal safety and health in keeping with the highest standards.

We will maintain a safety and health program conforming to the best management practices of laboratories of this type. To be successful, such a program must embody the proper attitudes toward injury, illness, and chemical exposure prevention not only on the part of supervisors and employees, but also between each employee and his or her co-workers. Only through such a cooperative effort can a chemical hygiene program in the best interest of all be established and preserved.

Our objective is a chemical hygiene program that will reduce the number of chemical exposures, injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing, the best experience of laboratories similar to ours. Our goal is nothing less than zero exposures, accidents and injuries.

President
Heritage University

CHEMICAL HYGIENE PROGRAM

PROGRAM RESPONSIBILITY: The Laboratory Chemical Hygiene Officer (CHO) is Hector Franco. The CHO is responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. This person is authorized to amend these instructions and is authorized to halt any operation of the laboratory where there is danger of serious personal injury.

SPECIFIC DUTIES: Specific duties of the Heritage University Laboratory CHO include, but are not necessarily limited to the following:

1. Coordinating program requirements with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices.
2. Monitoring procurement and use of chemicals in the lab, including determining that facilities and training levels are adequate for the chemicals in use.
3. Performing regular formal chemical hygiene and housekeeping inspections including inspections of emergency equipment.
4. Assisting project directors in developing precautions and adequate facilities.
5. Maintaining current knowledge concerning the legal requirements of regulated substances in the laboratory.
6. Reviewing and implementing improvements to the Chemical Hygiene Plan on an annual basis.
7. Maintaining overall responsibility for the laboratory operation.
8. Ensuring that workers know and follow the chemical hygiene rules.
9. Determining the proper level of personnel protective equipment (PPE) required and ensuring it is available and in working order.
10. Ensuring that appropriate training has been provided to employees.
11. Monitor the waste disposal program.

1. STANDARD SAFETY PRECAUTIONS: Because few laboratory chemicals are without hazards, the following general precautions for handling all laboratory chemicals will be adopted by employees of this facility to minimize exposure and operate under the assumption that any mixture of hazardous chemicals is more toxic than the most toxic component. The following procedures are to be used when working with chemicals:

- 1.1 Accidents and spills

1.1.1 Eye contact: Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention. Report.

1.1.2 Ingestion: Encourage the victim to drink large amounts of water, seek medical attention, and review SDS. Report.

1.1.3 Skin contact: Promptly flush the affected area with water and remove any contaminated clothing; use a safety shower when contact is extensive. If symptoms persist after washing, seek medical attention.

1.1.4 Clean-up: Promptly clean up spills, using appropriate protective apparel and equipment and proper disposal.

1.2 Avoid unnecessary exposure to chemicals (contamination avoidance).

1.2.1 Do not smell or taste chemicals. Apparatus that can discharge toxic chemicals (vacuum pumps, distillation columns, etc.) should be vented into local exhaust devices.

1.2.2 Inspect gloves before use.

1.2.3 Do not allow release of toxic substances outside of ventilation hoods.

1.2.4 Use only those chemicals for which the quality of the available ventilation system is appropriate.

1.2.5 Avoid eating, drinking, smoking, gum chewing, or applying cosmetics or lip balm in areas where laboratory chemicals are present. Wash hands before conducting these activities outside of laboratory. Eating and drinking are prohibited in laboratory areas.

1.2.6 Avoid storing, handling, or consuming food or beverages in storage areas, refrigerators, glassware, or utensils that are also used for laboratory operation.

1.2.7 Handle and store laboratory glassware with care to avoid damage; do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur. Use equipment only for its designed purpose.

1.2.8 Wash areas of exposed skin thoroughly before leaving the laboratory.

1.2.9 Avoid practical jokes or other behavior that might confuse, startle, or distract another worker.

1.2.10 Do not use mouth suction for pipetting or starting a siphon.

1.2.11 Confine long hair (shoulder length and longer) with hairties and loose clothing. Hairties are available for use in CHO office.

1.2.12 Wear shoes at all times in the laboratory, do not wear sandals, perforated or open-toed shoes.

1.2.13 Keep the work area clean and uncluttered, with chemicals and equipment properly labeled and stored; clean up the work area on completion of an operation or at the end of each day.

1.2.14 Ensure that appropriate eye protection, where necessary, is worn by all persons, including visitors, in areas where chemicals are stored or handled.

1.2.15 Wear appropriate gloves when the potential for contact with toxic materials exists; inspect the gloves before each use, wash them before removal, and replace them periodically.

1.2.16 Use any other protective and emergency apparel and equipment as appropriate.

1.2.17 Avoid use of contact lenses in the laboratory unless necessary; if they are used, inform supervisor so special precautions can be taken.

1.2.18 Remove laboratory coats immediately upon significant contamination.

1.2.19 Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.

1.2.20 Leave lights on, place an appropriate sign on the door, and provide for containment of toxic substances in the event of failure of a utility service (such as cooling water) in an unattended operation.

1.2.21 Use a hood for operations that might result in release of toxic chemical vapors or dust. As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substance with a TLV of less than 50 ppm.

WARNING

- Confirm adequate hood performance before use.
- Keep materials stored in hoods to a minimum.
- Do not allow materials to block vents or air flow.
- Leave the hood "on" when it is not in active use if toxic substances are stored in it or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is "off."

1.2.23 Be aware of unsafe conditions and see that they are corrected when detected.

2. CHEMICAL INVENTORY. A chemical inventory will be (performed) maintained on an annual basis. The inventory will compile a listing all hazardous chemicals in the laboratory. Chemicals listed are those classified as hazardous by the Department of Transportation (DOT), the Environmental Protection Agency (EPA), or displaying a 2 or greater number in any section of the National Fire Protection Association (NFPA) diamond (DOT and EPA classifications are in Appendices A and B).

2.1 Inventory arrangement. Chemicals will be listed alphabetically by name listed on container. [SDS's] will be matched to inventory and alphabetized by name on chemical container. The NFPA hazard classification, if known, will be listed along with the manufacturer's name. (A chemical inventory form is provided in Appendix C.)

Commented [ZC1]: Changed from MSDS to SDS

2.2 Accessibility. Inventories will be computerized whenever possible to provide the capability of sorting according to manufacturer or location. A complete chemical inventory is located in or provided to the following:

<u>Agency/Facility Location</u>	<u>Contact</u>	<u>Office Phone</u>
Chemical Hygiene Officer / Educational Laboratory Technician	Hector Franco	865-8558

3. SAFETY DATA SHEETS: Upon completion of the annual chemical inventory, request letters will be sent to manufacturers if SDS that are missing. A sample letter is in Appendix D.

3.1 Availability. SDS will be available in the central laboratory section in 3-ring binders. The SDS will be filed in alphabetical order along with a chemical inventory of the section. The laboratory relies on the chemical manufacturer's information to ascertain whether or not the chemical is hazardous.

3.2 Master SDS file. SDS will be available on the Stericycle website access provided by CHO

. An example of a SDS is in Appendix E.

4. CHEMICAL STORAGE: Storage of laboratory chemicals presents an on-going safety problem. Attention to the hazards associated with a specific chemical must be understood, additionally, the reactivity of the chemical itself must be considered.

4.1 General requirements.

4.1.1 Received chemicals. Received chemicals will be immediately moved to the designated chemicals to be added to inventory storage area.

4.1.2 Ventilation and illumination. The storage area will be well ventilated and illuminated.

4.1.3 Accessibility. Material will be arranged so that larger items, particularly in breakable containers are situated closer to the floor.

4.1.4 Storage classification. Materials will be segregated by their hazard characteristics, classification, and compatibility. The area will be well defined and labeled with appropriate markings and labels.

4.1.5 Preparation or repackaging. The storage area will not be used as a preparation or repackaging area.

4.1.6 Accessibility. The storage area will be accessible during normal working hours. The storage area is under the control of the Chemical Hygiene Officer.

4.1.7 Hand transport. When hazardous materials are transported by hand they will be transported using both hands or in a leak-proof secondary container such as a bucket.

4.1.8 Use minimization. Storage of materials at the point of use will be limited to those amounts necessary for one operation or shift. The container will be properly labeled and of a minimum size to make it convenient for use. Materials will never be unduly exposed to light or heat.

4.2 Inventory minimization. Chemical storage should be kept as small as practical. Storage on bench tops and in hoods may cause potential exposure to fire and spills. Ventilated cabinets and specially monitored refrigerators are used for chemical storage only. No food is permitted in these refrigerators. Flammable liquids will be stored in flammable storage cabinets with self-closing doors and proper ventilation according to NFPA standards.

4.3 Inventory inspection. Periodic inventories of materials outside the storage area will be conducted by the Chemical Hygiene Officer. Unneeded items shall be properly discarded or returned to the storage area.

4.4 Toxic chemicals. Toxic chemicals, including carcinogens, will be stored in ventilated storage areas in unbreakable chemical resistant secondary containers. These containers will be labeled toxic according to NFPA standards of labeling. A separate inventory list of carcinogens and suspected carcinogens is maintained by the Chemical Hygiene Officer according to federal and state regulations.

4.5 Mineral acid storage. Mineral acids will be separated from flammable and combustible materials. Separation is defined by NFPA 49 as storage within the same fire area but separated by as much space as practicable or by intervening storage from incompatible materials. Acid resistant trays shall be placed under bottles of mineral acids.

4.6 Acid-sensitive materials. Acid sensitive material such as cyanides and sulfides will be separated from acids or protected from contact with acids.

4.7 Compressed gas. Cylinders of compressed gases will be strapped (above the midpoint) or chained to a wall or bench top and will be capped when not in use. They will be stored on a clean dry surface. The area will be maintained free of combustible debris.

5. LABELING REQUIREMENTS: 29 CFR 1910.1450 contains specific labeling requirements. Labels must be affixed to all hazardous chemicals containers that are shipped and used in the workplace. Labels must not be removed or defaced.

5.1 Containers being shipped: Containers containing hazardous chemicals leaving this workplace will be labeled, tagged, or marked with the following information:

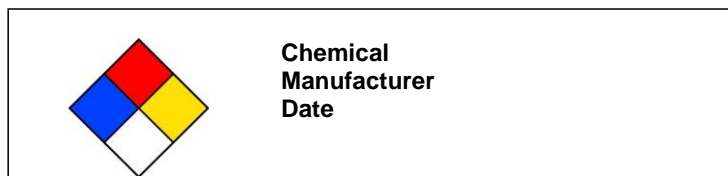
- 5.1.1 Identity of the hazardous chemical
- 5.1.2 Appropriate hazard warnings
- 5.1.3 Name and address of the manufacturer.
- 5.1.4 SDS will also be included.

5.2 Containers used in-house (Facility): Each hazardous chemical used within the laboratory that is not in its original container must also be labeled. These workplace labels must contain:

- 5.2.1 Identity of the chemical
- 5.2.3 Health hazard per NFPA rating.
- 5.2.4 Physical hazard per NFPA rating.

5.2.4 Flammability hazard per NFPA rating

An example of a label is shown below:



6. ENGINEERING CONTROLS: The engineering controls installed in this laboratory are intended to minimize employee exposure to chemical and physical hazards in the workplace. All employees are responsible for notifying management of deficiencies in the proper operation of such controls. If at any time, any employee does not understand the operation of an exposure control mechanism he or she should contact the Chemical Hygiene Officer without delay.

6.1 Hoods. General. Hoods will be utilized for all chemical procedures which might result in release of hazardous vapors, fumes, or dusts. As a general rule, hoods will be used for all procedures involving substances which are appreciably volatile and have a permissible exposure limit (PEL) less than 50 ppm. All biohazard and fume hoods will be inspected annually, and certified by ENV Services Testing & Certification, Inc (800-345-6094). The hood face velocity will be maintained between 75 and 125 feet per minute. Any hood not passing inspection will be "Locked-Out" of service immediately and not used until the hood has passed inspection. It is the responsibility of this employer to purchase the parts and to maintain the unit in a timely fashion so as not to endanger the health and well-being of an employee or place the facility at risk.

6.1.1 Work practices. The following work practices will be apply to the use of hoods.

- No employee will utilize any hood without first receiving training on the use of the hood.
- Confirm adequate ventilation in accordance with the manufacturers or installers specifications (alarmed hoods).
- Maintain the sash height as low as possible.

- Employees will confirm adequate hood ventilation performance (alarm is not sounding) prior to opening chemical containers inside the hood.
- Storage of chemicals and equipment inside the hood will be kept to a minimum.
- Interference with the inward flow of air in the hood will be minimized at all times.
- The hood will be left operating when it is not in active use if hazardous chemicals are contained inside the hood or if it is uncertain whether adequate general laboratory ventilation will be maintained when the hood is non-operational.
- Under no circumstances will the hood be used as a means to dispose of volatile chemicals.

6.1.2 The below listed information will be maintained

HOOD INVENTORY

<u>HOOD #</u>	<u>LOCATION</u>	<u>DATE INSTALLED</u>	<u>LAST INSPECTION</u>	<u>INSPECTOR</u>
1	2375	July 10	07/30/2024	Aarron Pritchard
2	2375	May 08	07/30/2024	Aarron Pritchard
3	2375	May 08	07/30/2024	Aarron Pritchard
4	2381	May 08	07/30/2024	Aarron Pritchard
5	2383	May 08	07/30/2024	Aarron Pritchard
6	2377	May 08	07/30/2024	Aarron Pritchard
7	2377	May 08	07/30/2024	Aarron Pritchard
8	2387	May 08	07/30/2024	Aarron Pritchard
9	2367	Aug 13	07/30/2024	Aarron Pritchard

6.3 Eyewash fountains. Eyewash fountains will be flushed weekly while classes are in session and inspected every 3 months and records maintained by the CHO (ext 2369) .

6.4 Safety showers. Safety showers will be inspected, tested, and flushed weekly while classes are in session and records maintained by the CHO (ext 2369) .

6.5 Fire extinguishers. Fire extinguishers will be inspected annually by Inland Fire Protection (509) 248-4471 through contract maintained by Jeff Beehler Plant Director.

6.6 Stockrooms/storerooms. All chemical stockrooms/storerooms will be maintained in an orderly fashion and well ventilated. Storeroom location is room 2373.

6.7 Storage cabinets. Ventilated storage cabinets for chemicals will be provided as needed and have a separate exhaust duct. These cabinets are located in room 2373.

6.9 Ventilation sampling. Air flow through the laboratory should be relatively uniform and be exhausted to the exterior of the building.

6.9.1 Additions of chemicals or new procedures. Upon addition of new hazardous or carcinogenic chemicals or changes in control procedures, additional air sampling will be considered to determine the exposures.

6.9.2 Exposure exceedances. Sampling will be conducted if there is any reason to believe that exposure levels for regulated substances that require sampling routinely exceed the action level, or in the absence of an action level, the PEL.

6.9.3 Highly toxic substances. Sampling will be conducted when usage of highly toxic substances significantly increases .

6.9.4 The results of air sampling studies performed in this laboratory are maintained and recorded on the form shown in Appendix "J" to this plan.

6.10 All chemical hygiene-related equipment will be monitored continuously and modified if inadequate.

7. PERSONAL PROTECTIVE EQUIPMENT. Employees are required to wear gloves when the employee has the potential for direct skin contact with blood, hazardous chemicals, and infectious materials.

7.1 Lab coats. Lab coats will be worn when chemicals are in use and are to be buttoned to protect the employee's clothing. Lab coats are provided by Heritage University. Disposable lab coats are required when working with blood or body fluids or level II infectious materials.

7.2 PPE Removal. All personal protective equipment will be removed immediately upon leaving the work area (or as soon as possible) and placed in an appropriate disposal site. All disposable PPE will be discarded in the trash. Those PPE contaminated with blood and or other body fluids must be disposed of in red biohazard bag. Non- disposable PPE are prohibited when working with

blood or body fluids or level II infectious materials. Non-disposable PPE will be laundered on site.

7.3 Eye/face Protection. Masks and eye protection or chin-length face shields meeting ANSI Z87.1 standards will be worn to prevent splashes or sprays of blood, level II infectious materials, or hazardous chemicals if there is a potential for eye, nose, or mouth contamination. This equipment is located in each educational laboratory and in the laboratory prep area.

7.4 Foot protection. Sandals, perforated shoes, and bare feet are prohibited.

7.5 Hand protection.

7.7.1 Chemical-resistant gloves. Chemical-resistant gloves will be worn as appropriate. The SDS and chemical manufacturer will be consulted to provide the appropriate type of glove for a given chemical.

7.7.2 Thermal-resistant gloves. Thermal-resistant gloves will be worn as appropriate for operations involving hot materials and materials contained in exothermic reaction vessels. The type of glove used will be made of a non-asbestos material and replaced when damaged or deteriorated.

8. CONTAMINATED WASTE REMOVAL/DISPOSAL. To assure that minimal harm to people, other organisms, and the environment will result from the disposal of waste laboratory chemicals, the waste disposal program, located in the office of the Educational Laboratory Technician, specifies how waste is to be collected, segregated, stored, and transported. All disposal is done in accordance with the Environmental Protection Agency and Department of Ecology in Yakima, Washington.

8.1 Generator status. This laboratory is considered a conditionally exempt small quantity generator according to the EPA, therefore, no RCRA permit is needed.

8.2 Disposal of material in drains. Certain chemicals are permissible for drain disposal. The drain system connects to a neutralization system that ultimately flows to a leach field located on site. Only those chemicals reasonably soluble in water are suitable for drain disposal. A compound is considered water soluble if it dissolves to the extent of at least 3%. These compounds are flushed with at least 100 volumes of excess water. Some exceptions should be noted:

8.2.1 Organics with boiling points less than 50 C

8.2.2 Those hydrocarbons, halogenated hydrocarbons, nitro compounds, mercaptans, and most oxygenated compounds that contain more than five carbon atoms (e.g., freon)

8.2.3 Organics that are explosives such as azides and peroxides

8.2.4 Concentrated acids or bases

8.2.5 Highly toxic malodorous or lachrymatory substances.

8.2.6 Heavy metal salts or high hazard metal compounds

8.3 Disposal options. Indiscriminate disposal by pouring waste chemicals or unknown mixtures down the drain or adding them to mixed refuse for landfill burial is unacceptable. No liquids of any type are to be disposed in the normal trash. Hoods are not to be used as a means of disposal for volatile chemicals. Disposal by recycling or chemical decontamination is used when possible.

8.4 Waste removal. All unwanted materials will be referred to as waste. Waste will be removed from this laboratory to a central waste storage area located in room 2371. All waste will be labeled with the words waste and a form of identification such as the type of chemical present or the experiment from which the waste is a product. In the central lab waste will be removed in accordance with WAC 173-303-235 9ai –scheduling waste removal on a regular interval. The two minimum waste transport dates will be at the end of fall semester and at the end of spring semester unless volumes of waste exceed the small generator maximums of 2.2 pounds or 1 quart of reactive acutely hazardous waste or 55 gallons of total waste at which point waste will be removed within 10 business days and faculty will be notified that waste levels have exceeded maximum values. Within 4 days of receipt in the central lab a designation of Waste will be made by the chemical hygiene officer and labels affixed to wastes in accordance with WAC 173-303-070, WAC 173-303-110 dangerous wastes table. The words "hazardous waste" or "dangerous wastes" will be placed on the container label that is affixed or attached to the container and count the dangerous waste toward the small generator status, before the dangerous waste may be removed from the laboratory. This laboratory stores its waste in room 2371. Waste will be transported by the chemical hygiene officer to the Yakima county Household & Small Business Waste Collection Facility, 7151 Roza Hill Drive, Yakima, WA 98901 Phone: 509-574-2450. The transporter will package all dangerous waste for transport in accordance with United States DOT regulations on packaging label each package in accordance with United States DOT regulation Mark each package of dangerous waste in accordance with the applicable United States DOT regulations and mark the packaging as such: HAZARDOUS WASTE - State and federal law prohibits improper disposal. If found, contact the nearest police or public safety authority, and the Washington State Department of ecology or the United States Environmental Protection Agency. Heritage University 3240 Fort Rd Toppenish, WA 98948 EPA Identification Number and Manifest Tracking Number. All Faculty and work study will be educated as to the need for waste management and all activities/labs will be evaluated for wastes that may be hazardous or dangerous. All waste processing will be done by the chemical hygiene officer who is trained in waste handling. Heritage University does not

have chemicals that become more dangerous when they exceed their expiration date and/or as they degrade.

8.5 Biomedical Waste, including waste specimens should be disposed in containers provided by Stericycle (866-783-7422). Containers will be collected, transported, treated and disposed by Stericycle.

9. ADMINISTRATIVE CONTROLS. The CHO is responsible for the safe operation of the area. All activities and procedures require approval by the medical director and the employer before implementation. Appendix F lists the duty title, key personnel, and important telephone numbers for the laboratory.

9.1 Environmental monitoring. Environmental monitoring is required in all laboratories for the following chemicals stored or used 3 times/week:

29 CFR 1910 Subpart Z

1910.1001	Asbestos, tremolite, anthophyllite, and actinolite (eff. 7-21-86)
1910.1002	Coal tar pitch volatiles; interpret. of term
1910.1003	4-Nitrobiphenyl
1910.1004	alpha-Naphthylamine
1910.1005	[Reserved]
1910.1006	Methyl chloromethyl ether
1910.1007	3,3'-Dichlorobenzidine (and its salts)
1910.1008	bis-Chloromethyl ether
1910.1009	beta-Naphthylamine
1910.1010	Benzidine
1910.1011	4-Aminodiphenyl
1910.1012	Ethyleneimine
1910.1013	beta-Propiolactone
1910.1014	2-Acetylaminofluorene
1910.1015	4-Dimethylaminoazobenzene
1910.1016	N-Nitrosodimethylamine
1910.1017	Vinyl chloride
1910.1018	Inorganic arsenic
1910.1025	Lead
1910.1028	Benzene
1910.1029	Coke oven emissions
1910.1043	Cotton dust
1910.1044	1,2-dibromo-3-chloropropane
1910.1045	Acrylonitrile
1910.1047	Ethylene oxide
1910.1048	Formaldehyde
1910.1101	Asbestos

9.2 Spill containment. Spill containment kits are located in each educational laboratory underneath the chemical hood cabinet. Chemical spills will be contained using the Think C.L.E.A.N.E.R. principle:

- * **C**ontain the spill.
- * **L**eave the area.
- * **E**mergency Decontamination: Eye wash, shower, medical care.
- * **A**ccess SDS for follow-on emergency procedures.
- * **N**otify supervisory staff and CHO of incident.
- * **E**mergency Response Notification (9-911) if needed.
- * **R**eport. Gather information for spill report.

9.3 Risk Assessment Determination. Assessment of significant risk of all operations will be made by the Laboratory Manager or Chemical Hygiene Officer. Chemical hygiene and safety policies will be established for each task performed and engineering controls or personal protective equipment assigned. The attached list identifies each workstation/task in the laboratory and the required controls and equipment.

CHEMICAL HYGIENE RISK ASSESSMENT

Department of Laboratories Verified by: Hector Franco

Extension: 2369

<u>Task--Routine Operation</u>	<u>Risk*</u>	<u>Protective Equipment</u>
Use of carcinogenic chemicals	H	Ventilation, labcoat, goggles, gloves,
Use of Organic solvents/flammables	H	Ventilation,gloves, goggles, labcoat
Use of Corrosives	H	lab coat, gloves, goggles
Transport Closed Container	L	Lab coat, gloves, goggles
Use of Formaldehyde specimen	L	ventilation, gloves, lab coat, goggles
Transport Closed Chloroform container	H	secondary spill container, gloves, lab coat, goggles

Mix Reagent for Test	H	Lab coat, latex gloves, goggles, plastic apron
Manipulation of bodily fluid samples	H	Lab coat (disposable), Nitrile Gloves, Face shield, Engineering controls imperative
Use of Nessler's reagent	H	Lab coat gloves in hood-designated disposal container

* L = low risk M = moderate risk H = high risk

Commented [ZC2]: Do we want to add additional tasks considered dangerous?

10. MEDICAL REQUIREMENTS.

10.1 Examinations and consultations after an overexposure incident. All medical examinations and consultations will be performed by or under the direct supervision of a licensed physician without cost to the employee, without loss of pay, and at a reasonable time and place. A board-certified physician in occupational medicine will be used whenever possible.

10.1.1 Factors routinely contributing to or corroborating overexposure incidents:

- Poor work habits.
- Poor engineering controls.
- Poor administrative controls.
- Historical data from similar operations.
- Use of significant quantities of a chemical.
- Use of a chemical over an extended period of time.

10.2 Medical evaluations. See exposure control plan for detailed information related to blood borne pathogen exposure. All employee's will be sent for a medical evaluation:

10.2.1 Whenever signs and symptoms associated with a hazardous chemical develop.

Commented [ZC3]: ECP needs determination of process for hep B shot

10.2.2 When environmental monitoring reveals an exposure level routinely above the action level.

10.2.3 Whenever an event takes place in the work area such as a spill, leak, or explosion resulting in hazardous chemical exposure.

10.2.4 Whenever a exposure event occurs where the possibility of contamination of employee by blood bourne pathogens is present (eg. Needle prick)

Commented [ZC4]: Added to match stericycle exposure plan

10.3 Information provided to the physician. This laboratory will provide the following information to the physician:

10.3.1 Identity of the hazardous chemical(s) to which the employee may have been exposed.

10.3.2 A description of the conditions under which the exposure occurred-including quantitative exposure data (if available).

10.3.3 A description of the signs and symptoms of exposure.

10.3.4 A copy of the SDS for the chemical(s) involved.

10.3.5 A copy of 29 CFR 1910.1450.

10.4 Physicians written opinion. This Laboratory will request that the physician provide a written opinion that will not reveal specific finding of diagnosis unrelated to the exposure but will include:

10.4.1 Recommendation for further medical follow-up.

10.4.2 Results of the medical examination and any associated tests.

10.4.3 Any medical conditions that may be revealed in the course of the examination that may place the employee at increased risk as a result of exposure to a hazardous chemical found in the workplace.

10.4.4 A statement by the physician that the employee has been informed of the consultation/examination results and any medical condition that may require further examination or treatment.

10.5 Exposure monitoring. For laboratory uses of OSHA regulated substances, this employer shall assure that laboratory employees' exposures to such substances do not exceed the permissible exposure limits specified in 29 CFR part 1910, subpart Z.

10.6 Employee exposure determination.

10.6.1 Initial monitoring. This employer shall measure the employee's exposure to any substance regulated by a standard which requires monitoring if there is reason to believe that exposure levels for that substance routinely exceed the action level (or in the absence of an action level, the PEL).

10.6.2 Periodic monitoring. This employer shall do everything possible to ensure our employees are not exposed to levels exceeding any recommended action level, or PEL. If the initial monitoring discloses employee exposure over the action level (or in the absence of an action level, the PEL), this employer shall immediately comply with the exposure monitoring provisions of the relevant standard.

10.6.3 Termination of monitoring. Monitoring may be terminated in accordance with the relevant OSHA standard.

10.6.4 Employee notification of monitoring results. This employer shall, within 15 working days after the receipt of any monitoring results, notify the employee of these results in writing either individually or by posting results in an appropriate location that is accessible to employees.

10.6.5 Known chemicals that require monitoring. The following chemicals will be routinely monitored by this employer, other chemicals not routinely used will be monitored as the requirement arises.

CHEMICALS LIST FOR MONITORING PROGRAM

<u>MSDS NAME</u>	<u>DATE USE BEGAN</u>	<u>ACTION LEVEL</u>	<u>REGULATORY STANDARD</u>
Formaldehyde	09/20/2010	0.75TWA, 2 STEL	29 CFR 1910

11. CHEMICAL HYGIENE COMMITTEE. Responsibilities for the Chemical Hygiene Program rest with the Chemical Hygiene Officer.

11.1 Composition. The chemical hygiene committee will be comprised of members of management/supervision and other select personnel. The make up of the committee will consist of the following:

CHEMICAL HYGIENE COMMITTEE

<u>Title</u>	<u>Member</u>

Chairman	Tyson Miller, Science Department Chair
Vice Chairman	Hector Franco, Chemical Hygiene Officer
Member	Crystal Sampson, Human Resources Director
Member	Jeff Beehler, Director of Physical Plant
Member	David Laman

11.2 Principal Responsibilities. The principal responsibilities of the committee will be as follows:

11.2.1 Assemble on a semi-annual or quarterly basis to conduct meetings.

11.2.2 Conduct and oversee departmental evaluations, inspections, and reviews.

11.2.3 Review accident, injury, and near-miss reports to determine program deficiencies and discuss corrective actions.

11.2.4 Direct and monitor departmental training and safety meetings (monthly).

11.2.5 Discuss and report on unfinished business from previous meetings.

11.2.6 Discuss new business.

11.2.7 Maintain appropriate records of activities.

11.2.8 The CHO of CAS will make notations of the meeting. The CHO will track open items to conclusion.

11.3 Charter. Charter for the committee. This committee will be responsible for developing Chemical Hygiene policy and procedure. The committee will encourage awareness among all employees. It will be established to evaluate, and monitor the performance of evaluated hazards, perform the necessary evaluations, and inspections, and aid the CHO in administering the company safety program.

- To reduce injuries and save lives by prevention of unwanted exposure to hazardous chemicals.

- To constantly be aware of conditions in all work areas that can produce injuries.
- To aid the company in complying with all laws pertaining to Chemical Hygiene.
- To place the personal safety and health of each employee of this company, and the general public located in the vicinity of this facility in a position of primary importance.
- To aid in the prevention of occupationally-induced injuries and illnesses.
- To the greatest degree possible, aid management in providing all mechanical and physical facilities required for personal safety and health in keeping with the highest standards.
- To maintain a Chemical Hygiene program conforming to the best management practices of organizations of this type.
- To establish a program that instills the proper attitudes toward Chemical Hygiene not only on the part of supervisors and employees, but also between each employee and his or her co-workers.
- To ultimately achieve a Chemical Hygiene program maintained in the best interest of all concerned.

11.4 Investigation of incidents and near misses. Incident investigation will be directed by the Science Chair. The investigation will be initiated as promptly as possible, but no more than 48 hours following the incident. The investigation will focus on the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. Routine investigations will be conducted by the CHO on all incidents and near misses. The investigation will be conducted to discover conditions and work practices that could be determined to lead to employee exposure, toxic releases, accidents and industrial illnesses.

11.5 Chemical Hygiene incident investigation team. The team director will select additional personnel as required to serve on the team based on the specific incident being reviewed. The core will be comprised of the following core team members:

CHEMICAL HYGIENE INCIDENT INVESTIGATION TEAM

Title

Director

Member

Tyson Miller, Science Department Chair

Member Hector Franco, Chemical Hygiene officer
Member Crystal Sampson, Director of Human Resources
Member Jeff Beehler, Director of Physical Plant

Commented [ZC5]: Updated names

11.6 Intervals. CHO will coordinate dates and times with all assigned inspection team members. The team will conduct routine inspections on a quarterly basis or when conditions or near misses occur which warrant an unscheduled investigation.

11.7 Hazard/Deficiency priority classification system. Hazards/Deficiencies will be rated according to the following rating system. Where it is unclear where a hazard/deficiency should be rated, the next higher priority classification will be assumed.

11.7.1 Priority 1. The most serious type of unsafe Chemical Hygiene condition or unsafe work practice that could cause a chemical exposure resulting in loss of life, or permanent disability, or extensive loss of structure, equipment, or material.

11.7.2 Priority 2. An unsafe condition or work practice that could cause a chemical exposure resulting in serious injury, illness, or disruptive property damage.

11.7.3 Priority 3. An unsafe condition or work practice that could cause a recordable injury, illness, or nondisruptive property damage.

11.7.4 Priority 4. Minor condition, a housekeeping item or unsafe work practice infraction with little likelihood of injury, illness, or nondisruptive property damage.

12. GENERAL CHEMICAL HYGIENE RESPONSIBILITIES.

12.2 Upper Management will: Support the Chemical Hygiene program to the fullest extent possible.

12.3 The Chemical Hygiene Officer will:

- Work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices.
- Provide Certification of the performance of protective equipment.
- Monitor procurement, use, and disposal of chemicals used in the lab.

- See that appropriate audits are maintained.
- Help Project Directors develop precautions and adequate facilities.
- Know the current legal requirements concerning regulated substances.
- Seek ways to improve the chemical hygiene program.

12.4 The immediate supervisor has responsibility to:

- Ensure that workers know and follow the chemical hygiene rules, that protective equipment is available and in working order, and that appropriate training has been provided.
- Provide regular, formal chemical hygiene and housekeeping inspections including routine inspections of emergency equipment.
- Know the current legal requirements concerning regulated substances.
- Determine the required levels of protective apparel and equipment.
- Ensure that facilities and training for use of any material being ordered are adequate.

12.5 The laboratory employee or workstudy is responsible for:

- Planning and conducting each operation in accordance with the institutional chemical hygiene procedures
- Developing good personal chemical hygiene habits.

13. TRAINING: This employer shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area.

13.1 Initial training. Chemical hazard information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. For educational laboratory courses, students given a basic chemical hazard information and training on first day of laboratory class.

13.2 Refresher training. Refresher training will be conducted on an annual basis :

13.2.1 Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever this employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge of proper lab safety practices or procedures.

13.2.2 The retraining shall reestablish employee proficiency and introduce new or revised practices and procedures, as necessary.

13.3 Content of training. Information to be presented in initial and refresher training. As a minimum, employees shall be informed of:

13.3.1 The contents of 29 CFR 1910.1450. The standard and its appendices shall be made available to employees.

13.3.2 The contents of the Chemical Hygiene Plan shall be made available to employees.

13.3.3 The location and availability of this employer's Chemical Hygiene Plan.

13.3.4 The permissible exposure limits for OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard.

13.3.5 Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.

13.3.6 The location and availability of reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including, but not limited to, Safety Data Sheets received from the chemical supplier.

13.3.7 Methods and observations that may be used to detect the presence or release of a hazardous chemical.

13.3.8 Continuous monitoring devices:

CONTINUOUS MONITORING DEVICES

<u>DEVICE</u>	<u>HAZARD DETECTED</u>	<u>TYPE WARNING</u>	<u>ACTION REQUIRED</u>
Hood alarm	Lack of airflow	beeping alarm	immediate cessation of use and Contact CHO for correction.
Potential cessation of use of room if inadequate room ventilation is detected			

13.3.9 Types, visual appearances or odors of routinely used hazardous chemicals when being released.

SUBJECTIVE DETECTION OF ROUTINELY USED CHEMICALS

<u>CHEMICAL</u>	<u>VISUAL APPEARANCE</u>	<u>ODOR DETECTED</u>	<u>PHYSICAL/ HEALTH HAZARDS</u>
chloroform	vapor/undetected	organic solvent smell	reduced oxygen/hypoxia
Formaldehyde	vapor/undetected	organic solvent smell	pulmonary inf., death, cancer

13.3.10 The physical and health hazards of chemicals routinely used in the work area.

SEE CHEMICAL SDS INVENTORY.

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

13.3.12 The employee shall be trained on the applicable details of this employer's written Chemical Hygiene Plan.

13.3.13 The employee will complete the Laboratory Safety checklist prior to working in any aspect that may cause exposure.

13.4 Certification. This employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

13.5 Lesson guide. The following lesson guide will be used as a guide for conducting Chemical Hygiene Training.

CHEMICAL HYGIENE TRAINING LESSON GUIDE

I. LEARNING OUTCOMES: Upon completion of the Chemical Hygiene Training Program the employee will be able to:

- A. Locate the potentially hazardous chemicals in the workplace.
- B. Recognize the chemical labeling and its meaning.
- C. Locate the SDS book in the workplace.
- D. Locate the health hazard, physical hazard, environmental protection, and special protection sections of the SDS and explain their uses.

- E. Identify the department Chemical Hygiene Officer by name and title.
- F. Discuss the major components of the facility's standard labeling system.
- G. Identify the appropriate protective clothing for the area and demonstrate its use.
- H. Demonstrate emergency procedures in the event of a hazardous chemical spill.
- I. Describe the environmental monitoring protocol.

II. ACTIVITY PLAN

- A. Audiovisuals for safety training.
 - 1. General Laboratory Safety DVD by the Training Network.
 - 2. Operation of ventilation hoods.
 - 3. Formaldehyde technical guide
 - 4. PPE selection and use guide
 - 5. Laboratory waste disposal guidelines
 - 6. C.L.E.A.N.E.R. handout
 - 7. Emergency Procedures posting
 - 8. Sharps training handout.
 - 9. Autoclave training handout
 - 10. Chemical labeling system
- B. Safety Video and safety handouts
- C. Topics to be covered.
 - 1. Content of the lab standard 29 CFR 1910.1450.
 - 2. Location of the CHP.
 - 3. Identification of hazardous chemicals.
 - a. Location of chemical inventory.
 - b. Location of SDS.
 - i. Obtaining a copy. (right to know)
 - c. Labeling information.
 - i. Hazard warnings.
 - ii. Carcinogen warnings.
 - iii. Location in workplace.
 - 4. Procedures for handling hazardous chemicals.
 - a. Work practices.
 - b. Proper moving, storing, and use.
 - c. PEL for specific chemicals used by the employee.

- d. Visual appearance of chemicals used by employees.
 - e. Environmental monitoring required.
 - f. Signs and symptoms of exposure.
 - g. Location of Target Organ list(Appendix G).
 - h. Protective equipment to prevent overexposure.
 - i. Conditions to avoid.
5. Environmental protection.
- a. Emergency procedures.
 - b. Spill containment think C.L.E.A.N.E.R. protocol.
 - c. Medical consultation procedures.
 - d. Location of all fire extinguishers
 - i. use of fire extinguisher
 - e. Location of all eyewash/showers
 - i. use of eyewash station
 - f. Location of spill kits
 - g. Location of First Aid kits/ auto CPR machine
 - i. first aid training
6. Documentation of initial and annual training.

14. HOUSEKEEPING (Custodial services).

14.1 Floors will be cleaned regularly by housekeeping. All employees of the housekeeping department will be formally trained in the risks associated with working as a custodian in the laboratory.

14.2 CHO will conduct an inspection of the lab areas on a weekly basis to assess whether:

14.2.1 Stairwells and hallways are free of obstruction.

14.2.2 Waste is deposited in appropriate receptacles.

14.2.3 Waste is properly removed from the laboratory.

14.2.4 Proper storage is used to minimize clutter.

14.2.5 Chemical spills are cleaned according to established protocol. See CHO for protocol to be used to contain chemical spills.

15. HOUSEKEEPING (Employee responsibilities).

15.1 Responsibility. Each employee is responsible for the cleanliness and orderliness of their work area, and jointly responsible for common areas within this facility. Supervisors will maintain the highest standards for housekeeping.

15.2 Spills. All spills on lab benches or floors will be immediately cleaned and properly disposed of according to the CLEANER program. Large spills will necessitate the implementation of the emergency action plan per 29 CFR 1910.38 and .120. For large spills contact The CHO, Hector Franco at ext 2369, Tyson Miller at extension 2340, Jeff Beehler at ext 3702 AND in addition, for large spills of volatile chemicals, dial 911 and evacuate all affected areas.

15.3 Only "in-use" chemicals are allowed to remain in the work area, all other chemicals will be properly disposed of or stored.

15.4 The work area will be thoroughly cleaned and placed in order at the end of each work shift (see SOP 001).

15.5 All floors, aisles, exits, fire extinguishing equipment, eyewashes, showers, electrical disconnects and other emergency equipment will remain unobstructed at all times.

15.6 All labels on containers will face to the "front".

15.7 Chemical containers will be clean, properly labeled and returned to storage upon completion of usage.

15.8 All chemical wastes will be disposed of in accordance with the waste disposal plan.

15.9 See Housekeeping schedule form for additional information

Commented [ZC6]: Need to create this form what tasks? Who does them?

Commented [ZC7R6]:

16. RECORDKEEPING. The laboratory will establish and maintain an accurate record for each employee. All records will be kept, transferred, and made available in accordance with 29 CFR 1910.20. Exposure records for hazardous chemicals and harmful physical agents will be maintained for 30 years. Medical records for employees exposed to hazardous chemicals and harmful physical agents will be maintained for the duration of employment plus 30 years. The following categories will be annotated as required: Environmental monitoring, medical consultations, and examinations, including any tests or written opinions.

16.1 Accident records are written and retained by:
Human Resources

16.2 Inventory and usage records for high-risk substances are maintained by:
Chemical Hygiene Officer – Hector Franco ext 2369

16.3 Environmental monitoring records are maintained by:
Chemical Hygiene Officer – Hector Franco ext 2369

16.4 Medical consultation records are maintained by:
Human Resources

16.5 Training attendance records are maintained by:
Chemical Hygiene Officer – Hector Franco ext 2369

16.6 OSHA 101 forms are maintained and kept for 5 years by:
Human resources

16.7 OSHA 200 forms are maintained:
Human resources

16.8 OSHA 2203 forms are posted within each work area by:
Human resources

16.9 Inspections of equipment will be maintained for ventilation hoods, Eyewash and shower stations – Hector Franco.

17. PROCUREMENT OF CHEMICAL MATERIALS.

17.1 Responsible use. Chemicals purchased by this laboratory will be used in a responsible manner through disposal.

17.2 Requests for material. Requests for new materials or material quantities in excess of normal usage quantities will be routed through the Chemical Hygiene Officer for approval. The "New Material Purchasing Request" form will be used for this purpose. The CHO and Chair will review the request and if approved, will forward it to business office, for procurement.

17.3 Hazard information. Before the chemical is received for use, a SDS and any other safety information (and personal protective equipment) must be obtained. Employees will be trained on the hazards, and equipment to safely use the material before use.

18. RECEIVING OF CHEMICAL MATERIALS.

18.1 Receiving controls. All chemicals will be received through a central location, Shipping and Receiving Building by Julie MoneyMaker.

19.2 Shipping and receiving records are maintained by:
Julie MoneyMaker (telephone ext. 3701).

20.3 SDS's. No material will be received without a SDS.

19. LABORATORY EQUIPMENT AND GLASSWARE. Each employee is responsible to keep their work area clean and uncluttered. All chemicals and equipment will be properly labeled in accordance with section 5. At the completion of each work shift or operation, the work area will be thoroughly cleaned and all equipment properly cleaned and stored.

20.1 Equipment will be used only for its intended purpose.

20.2 Glassware will be handled and stored with care to minimize breakage; all broken glassware will be immediately disposed of in the broken glass container.

20.3 Evacuated glassware will be shielded to contain fragments/chemicals should implosion occur.

20.4 Labels will be attached to all chemical containers, identifying the contents and related hazards.

20.5 All waste receptacles will be identified.

20.6 All laboratory equipment will be inspected on a periodic basis as specified in Appendix I.

20. PERMITTING SYSTEM FOR LABORATORY ACTIVITIES. A permit system will be used for laboratory activities which present specific foreseeable hazards to employees. The activities include off-hours work, sole occupancy of a room, area, or building, hazardous, operations and unattended operations. The permit will be entitled "Chemical Hygiene Permit" and included in Appendix "O" to this plan and will be implemented prior to the performance of activities delineated in this section.

20.1 Off-Hours work procedures. Student laboratory personnel are not permitted to work without faculty supervision after-hours in the lab except when permission is granted through the CHO. Faculty laboratory personnel are permitted to work after-hours in the lab on an as-needed basis.

20.2 Sole occupancy. At no time will work be performed in the laboratory when the only person in the building is the laboratory person performing the work. Under unusual conditions, crosschecks, periodic security guard checks, closed circuit television, or other measures (specify) may be taken when permitted.

20.3 Hazardous work. All hazardous operations are to be performed during a time when at least two personnel are present at the laboratory. At no time will a laboratory person, while working alone in the laboratory, perform work which is considered hazardous. The determination of hazardous operations will be made by the laboratory supervisor and permitted.

20.4 Unattended operations. When laboratory operations are performed which will be unattended by laboratory personnel (continuous operations, overnight reactions, etc.), the following procedures will be followed:

- The permit system will be used.
- The laboratory supervisor will review work procedures to ensure for the safe completion of the operation.
- An appropriate sign will be posted at all entrances to the laboratory detailing special precautions for custodial workers, Name of person conducting experiment and date it will be finished, etc.
- The overhead lights in the laboratory will be left on.
- Precautions shall be made for the interruption of utility service during the unattended operation (loss of water pressure, electricity, etc.).
- The person responsible for the operation will return to the laboratory at the conclusion of the operation to assist in the dismantling of the apparatus and to remove all signs.

21. CHEMICAL SPILLS, RELEASES AND ACCIDENTS. In the event of a chemical spill or other accident, Heritage University will adhere to the procedures outlined in the Emergency Action Plan as required by OSHA Standard 29 CFR 1910.38 and 1910.120.

Commented [ZC8]: This links to plan that is campus wide

22. REFERENCES.

The following references were used to assist in the preparation of this plan:

22.1 29 CFR Part 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories.

23. APPENDICES.

Appendix A - DOT Hazard Classification List
Appendix B - EPA Hazard Classification List
Appendix C - Chemical Inventory
Appendix D - Sample SDS Request Letter
Appendix E - SDS Example
Appendix F - Directory
Appendix G - Target Organ Poster
Appendix H—Glossary
Appendix I --Laboratory Equipment Inspection records
Appendix J--Air Sampling Results
Appendix K—29 CFR 1910-1030 BBP

Appendix L—training paperwork
Appendix M- Evaluation form for generic safety devices
Appendix N- Exposure control plan annual documentation
Appendix O- Unattended experiment form
Appendix P – Hood inventory/certification doc
Appendix Q – Housekeeping form
Appendix R – BBP exposure Incident Forms
Appendix S – Stericycle Safety and health Plan
Appendix T – Stericycle Exposure Control
Appendix U – Stericycle Hazard communication
Appendix V – Stericycle Emergency Preparedness
Appendix W – laser safety plan

Appendix A. DOT HAZARD CLASSIFICATION LIST.

Hazard Classification	Example
1. Explosive A & B	Dynamite
2. Explosive C	Fireworks
3. Blasting agents	Plastic explosives
4. Radioactive material	CO-60 or I-130
5. Flammable liquids	Alcohol
6. Pyrophoric liquids	Phosphorus hydrides
7. Non-flammable compressed gases	Nitrogen
8. Flammable gases	Oxygen
9. Combustible liquids	Kerosene
10. Flammable solids	Picric acid/10% wet
11. Oxidizer	Nitric acid
12. Corrosive material	Hydrochloric acid
13. Irritating material	Lacramator
14. Poison A	Heptachlor
15. Poison B	Phenol
16. Organic peroxide	Benzoyl peroxide
17. *ORM-A	Formaldehyde
18. ORM-B	Mercury
19. ORM-C	Asbestos
20. ORM-D	Bleach
21. ORM-E	Ferric sulfate
22. Etiological agents	Microorganisms (E. coli)

*ORM = Other Regulated Material

Appendix B. EPA HAZARD CLASSIFICATION LIST.

1. IGNITABLE WASTE-- Flash point < 140 F
Flammable solids (10)
Oxidizers (11)
Flammable gases (8)
Some combustible liquids (9)
Flammable liquids (5)
Pyrophoric liquids (6)
2. CORROSIVES-- Any liquid of pH 2 or 12.5 (12)
3. REACTIVE-- Explosives A, B, or C (1, 2, or 3) Water reactive
Cyanide or sulfide
Organic peroxides (16)
Poison B (15)

4. (EXAMPLE ONLY) EXTRACTION PROCEDURE (EP) TOXIC

8 Metals:

Arsenic
Cadmium
Chromium
Mercury
Silver
Lead
Beryllium
Thallium

4 Pesticides:

Lindane
Endrin
Toxaphene
Methoxychlor

2 Herbicides:

2,4 D
2,4,5 T

Poison A and some poison B (14 and 15)
Irritating material (13)
Radioactive material (4)
ORM-A-B-C (17,18, and 19)

ORM-E (21)

NOTE: Numerals in parentheses indicate chemical categories on the DOT list.

Appendix C. CHEMICAL INVENTORY printout from beginning of semester.

Appendix D. SAMPLE SDS REQUEST LETTER**SAMPLE LETTER REQUESTING AN SDS**

XYZ Chemical Manufacturer
1234 Street
Anytown, USA 11222

Dear Sir:

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) requires employers be provided Safety Data Sheets (SDS's) for all hazardous substances used in their facility, and to make these SDS's available to employees potentially exposed to these hazardous substances.

We, therefore, request a copy of the SDS for your product listed as Stock Number _____. We did not receive an SDS with the initial shipment. We also request any additional information, supplemental SDS's, or any other relevant data that your company or supplier has concerning the safety and health aspects of this product.

Please consider this letter as a standing request to your company for any information concerning the safety and health aspects of using this product that may become known in the future.

The SDS and any other relevant information should be sent to us within 10, 20, 30, days (select appropriate time). Delays may prevent use of your product. Send the information to the address listed below.

Please be advised that if we do not receive the SDS on the above chemical by _____, we may have to notify OSHA of our inability to obtain this information.

Your cooperation is greatly appreciated. Thank you for your timely response to this request. If you have any questions please contact me at (509) 865-8558.

Sincerely

Hector Franco Chemical Hygiene Officer
Heritage University
3240 Fort Rd
Toppenish, WA 98948

Appendix E. SAMPLE - SAFETY DATA SHEET.**SECTION I--GENERAL INFORMATION**

- PRODUCT/CHEMICAL NAME: 10% Neutral Buffered Formalin, v/v Chemical Family--Aldehyde
- BUSINESS TELEPHONE: 314/555-1235

SECTION II--HAZARDOUS INGREDIENTS

	<u>%</u>	<u>TLV</u>	<u>AGENCY</u>
37% Formaldehyde-- Stabilized with methanol (11% v/v)(probable carcinogen)	10 v/v	1 ppm-TWA 2 ppm-STEL	OSHA OSHA
Methanol	1	200 ppm	OSHA

SECTION III--PHYSICAL DATA

APPEARANCE	Clear colorless liquid
ODOR	Pungent odor
BOILING POINT (F)	204 to 211 F
EVAPORATION RATE (Butyl Acetate =1)	0.43
PERCENT VOLATILE BY VOL.	98%
SOLUBILITY IN WATER	100%--Complete
SPECIFIC GRAVITY (Water =1)	1.109 @ 21 C
VAPOR DENSITY (Air=1)	1.1
VAPOR PRESSURE (mm of Hg)	19

SECTION IV--FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED: PENSKY-MARTENS):
None observed below 180 F (82 C)

FLAMMABLE LIMITS IN AIR, % BY VOLUME:
Lower 7 Upper 73

EXTINGUISHING MEDIA:
Alcohol foam, dry chemicals, carbon dioxide, water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
May generate formaldehyde gas.

FIRE-FIGHTING PROCEDURES: Cooling container with water spray or fog will help to absorb escaping fumes. Evacuate affected areas. Stay upwind and avoid

contact with smoke and fumes. If contact cannot be avoided, wear personal protective equipment including chemical splash goggles and air mask with breathing air supply. Runoff from fire control may cause pollution.

SECTION V--REACTIVITY DATA STABILITY: Stable.

INCOMPATIBILITY: Reaction with phenol, strong acids or alkalis may be violent. Formaldehyde and hydrochloric acid may form bis-chloramethyl ether, an OSHA-regulated carcinogen.

HAZARDOUS DECOMPOSITION: Occurs slowly at elevated temperatures, releasing formaldehyde gas.

HAZARDOUS POLYMERIZATION: None.

SECTION VI--HEALTH DATA

INHALATION: May cause sore throat, coughing, and shortness of breath. Causes irritation to the respiratory tract. May be fatal in high concentrations.

INGESTION: Can cause severe abdominal pain, violent vomiting, headaches, and diarrhea. Larger doses may produce decreased body temperature, pain in the digestive tract, shallow respiration, weak irregular pulse, unconsciousness, and death. Methanol component affects the optic nerve and may cause blindness.

SKIN CONTACT: Toxic. May cause irritation to skin with redness, pain, and possible burns. Skin absorption may occur with symptoms paralleling those from ingestion.

EYE CONTACT: Vapor causes irritation to the eyes with redness, pain, and blurred vision. Higher concentrations or splashes may cause irreversible eye damage.

SECTION VII--FIRST AID PROCEDURES

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash

clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

EYE CONTACT: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

SECTION VIII--SPECIAL PROTECTION

VENTILATION: Ventilation adequate to keep formaldehyde concentrations below indicated exposure limits should be provided. If limits may be exceeded, use a full face air purifying respirator with cartridges approved for formaldehyde (up to 500 ppm) or supplied air respirator.

PERSONAL PROTECTIVE EQUIPMENT: Use chemical splash goggles, neoprene or polyvinyl chloride gloves and coveralls with long sleeves. Use breathing air supply from airline mask or self-contained breathing mask if exposure limits are exceeded.

SECTION IX--SPILL PROCEDURES

STEPS TO TAKE IN CASE OF RELEASE OR SPILL

- Keep upwind of leak; evacuate area until gas has dispersed.
- Soak up small leaks with rags or other absorbent and remove in covered metal containers or drums. Dike large spills. May be neutralized with dilute (5%) solutions of ammonia sodium sulfite or sodium bisulfite and removed. Flush spill area with plenty of water.

WASTE DISPOSAL METHOD: Comply with federal, state, and local regulations. If approved, flush to chemical sewer, incinerate, dispose in hazardous material landfill, or flush to wastewater treatment system. Very dilute solutions can be handled by biochemical action in formaldehyde-adapted waste treatment systems; water spray or fog will help absorb escaping fumes.

SECTION X--SHIPPING INFORMATION

STORAGE CONDITIONS: Keep container closed. Keep away from heat and open flames. Do not store below 15 C (59 F).

TRANSPORTATION: DOT Shipping Name--Formaldehyde or Formalin Solution. DOT Hazard Class--ORM-A (in containers of 110 gallons or less).

SHIPPING CONTAINERS: Drums, cubitainers, bottles.

Appendix F. DIRECTORY.

Location: Heritage University
3240 Fort Rd
Toppenish, WA
(509)865-8500

Facility Chair:	Tyson Miller	865-8500
Chemical Hygiene Officer:	Hector Franco	865-8500
Plant Engineering Director:	Jeff Beehler	865-8500

Laboratory Faculty

Melvin Simoyi	865-8500
Kazuhiro Sonoda	865-8500
Tyson Miller	865-8500
David Laman	865-8500
Jessica Black	865-8500
Alex Alexiades	865-8500
Dalia Maraoulaite	865-8500
Corbin Schuster	865-8500
Robert Kao	865-8500

Appendix G. TARGET ORGAN POSTER. A list of target organ effects shall be posted with chemical hygiene plan in a central location for access by all employees

Appendix H. GLOSSARY. The following terms are used as part of the Chemical Hygiene Program:

ACUTE - An adverse effect with symptoms of high severity coming quickly to a crisis.

CARCINOGEN - A substance capable of causing cancer.

CHEMICAL AGENTS - A wide variety of fluids that have a high potential for body entry by various means. Some are more toxic than others and require special measures of control for safety and environmental reasons.

CHRONIC - An adverse effect with symptoms that develop slowly over a long period of time or that frequently recur.

COMBUSTIBLE - Able to catch on fire and burn.

DOT - Department of Transportation

EPA - Environmental Protection Agency

FLAMMABLE - Capable of being easily ignited and of burning with extreme rapidity.

INFECTIOUS AGENTS - Sources that cause infections either by inhalation, ingestion, or direct contact with the host material.

LABORATORY SCALE - Work with chemicals that can easily and safely be manipulated by one person excluding the commercial production of chemicals for sale.

LABORATORY USE - A workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

LC 50 - The concentration of a substance in air that causes death in 50% of the animals exposed by inhalation. A measure of acute toxicity.

LD 50 - The dose that causes death in 50% of the animals exposed by swallowing a substance. A measure of acute toxicity.

SDS - Safety Data Sheets

MUTAGEN - Capable of changing cells in such a way that future cell generations are affected. Mutagenic substances are usually considered suspect carcinogens.

OSHA - Occupational Safety and Health Administration, the regulatory branch of the Department of Labor concerned with employee safety and health.

PEL - Permissible Exposure Limit. This is the legally allowed concentration in the workplace that is considered a safe level of exposure for an 8-hour shift, 40 hours per week.

pH - A measure of how acidic or caustic a substance is on a scale of 1 to 14. A pH of 1 indicates that a substance is acidic; a pH of 14 indicates that a substance is basic.

PHYSICAL AGENTS - Workplace sources recognized for their potential effects on the body. Heat exposure or excessive noise levels are examples of this risk group.

SENSITIZERS - Agents to repeated exposure over time creating an allergic reaction at some point in time.

STERILITY - Changes made in male or female reproductive systems resulting in inability to reproduce.

TERATOGENS - A substance that causes a deformity in newborns if a significant exposure exists during pregnancy.

TLV - Threshold Limit Value. The amount of exposure allowable for an employee in an 8-hour day.

Appendix I. LABORATORY EQUIPMENT INSPECTION RECORDS.

Appendix J. AIR SAMPLING RESULTS-FORMALDEHYDE.

Appendix O. CHEMICAL HYGIENE UNATTENDED EXPERIMENT PERMIT

UNATTENDED EXPERIMENT FORM

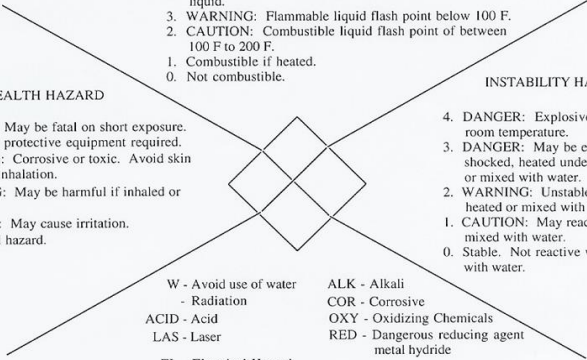
This is to be filled out for each experiment that is left in an unattended laboratory for an extended period. It is your responsibility to see that if a fire or other accident occurs in your laboratory the people who have to deal with the situation will not be endangered by your experiment regardless of whether your experiment was its cause. If the emergency develops during the night, the people who deal with it may be firemen or security personnel few of whom are trained chemists.

If your lab partners will be in the laboratory during the period while you are away, tell them whether or not the reaction is conceivably hazardous and if so what to look out for. If the laboratory is to be unattended, it is your responsibility to leave this form attached to the door. Information regarding the hazards of specific materials is available in the department safety manual, in "Prudent Practice in the Laboratory: Handling and Disposal of Chemicals" which is available from your Group Safety Officer or on the Safety Reference Shelf in the Library.

If you don't know enough about the experiment to fill in this form, you are not ready to run it.

Experimenter's Name _____ Phone _____
 Research Director's Name _____ Phone _____
 Location of Experiment (e.g. which hood?) _____
 Reactants Involved (no symbols or abbreviations) _____
 Products derived (including wastes) _____
 Gases evolved _____
 Directions in Case of Emergency _____

Fill squares below with appropriate code numbers

FIRE HAZARD		
4. DANGER: Flammable gas or extremely flammable liquid. 3. WARNING: Flammable liquid flash point below 100 F. 2. CAUTION: Combustible liquid flash point of between 100 F to 200 F. 1. Combustible if heated. 0. Not combustible.		
HEALTH HAZARD		INSTABILITY HAZARD
4. DANGER: May be fatal on short exposure. Specialized protective equipment required. 3. WARNING: Corrosive or toxic. Avoid skin contact or inhalation. 2. WARNING: May be harmful if inhaled or absorbed. 1. CAUTION: May cause irritation. 0. No unusual hazard.	W - Avoid use of water - Radiation ACID - Acid LAS - Laser EL - Electrical Hazard	4. DANGER: Explosive material at room temperature. 3. DANGER: May be explosive if shocked, heated under confinement or mixed with water. 2. WARNING: Unstable or may react if heated or mixed with water. 1. CAUTION: May react if heated or mixed with water. 0. Stable. Not reactive when mixed with water.
	ALK - Alkali COR - Corrosive OXY - Oxidizing Chemicals RED - Dangerous reducing agent metal hydride	

Appendix K 29CFR-1010-1030

Appendix L- Training documents

Appendix M- Evaluation form for generic safety devices

Appendix N- Exposure control plan annual review

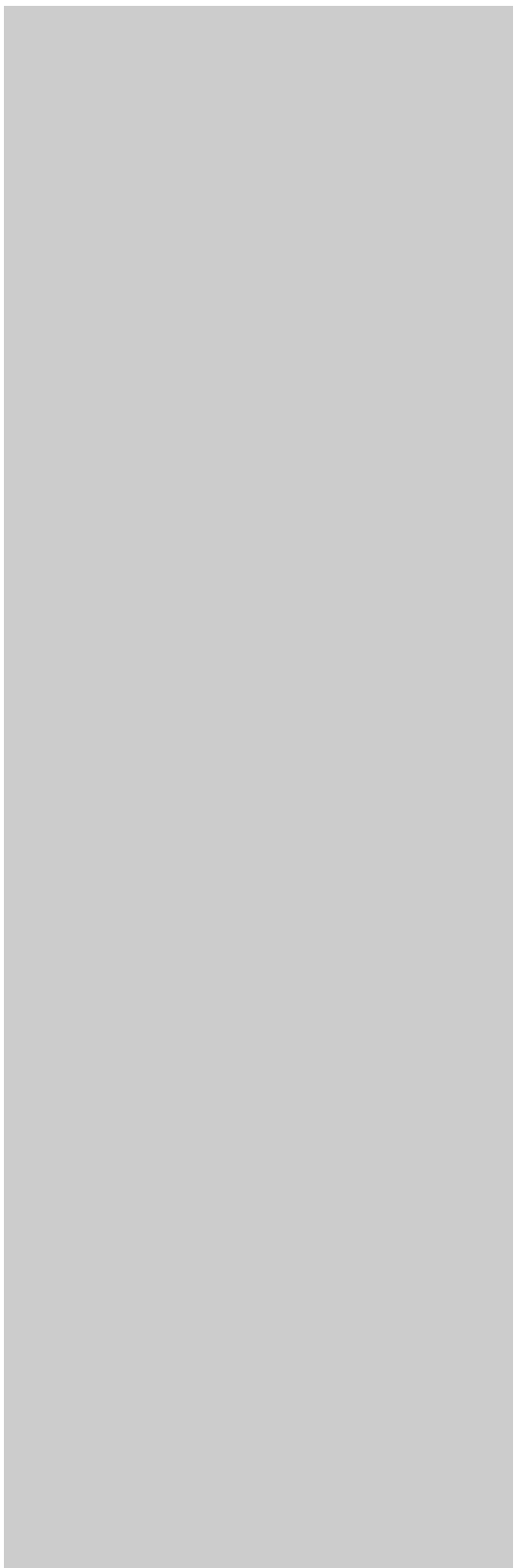
Appendix P – Hood inventory/certification doc

Appendix Q – Housekeeping form

Appendix R- BBP exposure incident report forms

Appendix S- Stericycle Safety and Health

Appendix T- Stericycle Exposure Control



Appendix U- Hazard Communication

Appendix V- Stericycle Emergency Preparedness

Appendix W- Laser Safety Plan

Appendix X- WAC 296-856 Formaldehyde technical guideline

Appendix Y- WAC 296-849 Benzene technical guideline