

 Portland Community College Health & Safety Manual	Dept: Environmental Health and Safety (EH&S)	
	Function: Facilities Management Services	
	Topic: Chapter 9 — Chemical Hygiene Plan	
	Board Policy: B507	Revised Date: Nov 2021

Authority	PCC Board Policy—B507
	Portland Community College is committed to providing a safe and healthy work and educational environment for our employees, students, and visitors.

Summary	The Chemical Hygiene Plan includes policies, procedures, and responsibilities to protect staff and students from health hazards associated with hazardous chemicals and has been designed to meet or exceed current regulatory standards.
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I. PURPOSE

Portland Community College (PCC) is committed to providing a safe working environment for staff and students and believes that they have the right to know about health hazards associated with their work. The Chemical Hygiene Plan (CHP) includes policies, procedures, and responsibilities to protect staff and students from health hazards associated with hazardous chemicals and has been designed to meet or exceed current regulatory standards.

Chemical risks will not be underestimated, and appropriate measures will be taken by PCC to minimize chemical exposure. Staff and students must take responsibility for their laboratory safety and the CHP has been designed to outline the policies and procedures to achieve this. Supervisors will make sure that all individuals in laboratories have access to all pertinent information to perform their work duties safely. Staff and students are encouraged to discuss any safety concerns with their supervisor.

The CHP is reviewed annually by the Chemical Hygiene Committee and Environmental Health and Safety (EH&S) to ensure that it reflects current PCC policies and procedures and is user friendly.

II. AUTHORITY

Includes but is not limited to:

- PCC Board Policy—B507
- OR-OSHA 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories
- OAR 437-002-0391 Additional Oregon Rules for Carcinogens in Laboratories
- Or-OSHA 1910.1003 13 Carcinogens
- Or-OSHA 1910.106 Table H-12 Allowable Size Containers for Flammable Liquids
- Or-OSHA 1910.1200 Hazard Communication
- American National Standards Institute (ANSI) Z358.1.

Other related Health & Safety Manual Chapters include:

- *Chapter 1 – General Safety Program & Responsibilities*
- *Chapter 8 – Hazard Communication*
- *Chapter 10 – Control of Hazardous Energy*
- *Chapter 21 – Regulated Waste*

III. RESPONSIBILITY

Chemical hygiene responsibility rests at all levels in the College as follows:

Program Deans have the ultimate responsibility for implementation, enforcement, and continuing support of the Chemical Hygiene Plan (CHP) in the departments that they oversee. This includes the following:

- Assigning knowledgeable staff to each Campus Chemical Hygiene Committee and call additional meetings as needed;
- Appointing a committee member to be Chairperson;
- Ensuring that all chemicals in use and storage are evaluated for possible hazards, special controls under cancer/reproductive or high toxicity OSHA requirements;
- Ensuring that Science instructional and support staff receive initial Chemical Hygiene training and take part in the periodic retraining as determined by the Chemical Hygiene Officer and Committee;

- Ensuring that Chemical Hygiene Committee recommendations and required actions are implemented.

Chemical Hygiene Officer responsibilities include:

- Monitoring the procurement and disposal of chemicals used in laboratories;
- Ensuring that appropriate inspections are conducted and documented;
- Assisting departments to develop precautions and adequate facilities. Specifically, to assist in determining the appropriate type of personal protective equipment and safety equipment needed to safely handle hazardous chemicals;
- Knowing the current legal requirements concerning regulated substances;
- Performing annual inspections of lab classrooms and prep spaces to ensure compliance with the Chemical Hygiene Plan.

Campus Chemical Hygiene Committee responsibilities include:

- Developing and implementing appropriate chemical hygiene policies and practices.
- Monitoring the procurement and use of chemicals used in laboratories.
- Seeking ways to improve chemical hygiene to assist in the review and revision of the Chemical Hygiene Plan.
- Assisting the Chemical Hygiene Officer in the inspection of each department to ensure compliance with the Chemical Hygiene Plan.

Committee Chairperson responsibilities include:

- Coordinating the scheduling of the Chemical Hygiene Committee meetings;
- Organizing and distributing meeting agendas;
- Selecting a committee member to take minutes for each meeting.

Campus Lead (either the IST 4 or Chemistry IST 3 for the campus) is responsible for:

- Consulting with the Chemical Hygiene Officer before any purchase of new hazardous chemicals by faculty or instructional technicians;
- Working with faculty and instructional technicians to make sure that appropriate engineering controls, work practices, safety/personal protective equipment, and training are in place prior to introducing a hazardous chemical into a laboratory;
- Ensuring that staff and students know and follow the chemical hygiene procedures and wear personal protective equipment when required;
- Verifying that chemical hygiene, housekeeping, and emergency equipment inspections are completed and are appropriately recorded.

Environmental Health and Safety responsibilities include:

- Serving as the PCC Chemical Hygiene Officer;
- Assisting the Committees with reviewing and updating the Chemical Hygiene Plan annually. Any change in procedures or types of chemicals will be incorporated into the Plan;
- Working with the department staff and the Campus Chemical Hygiene Committee to develop and deliver safety programs (e.g., training, air monitoring, and disposal of

hazardous waste) in support of this Plan;

- Representing the College in its relationship with the safety regulatory agencies (e.g., OR-OSHA, DEQ, and Fire Marshal) requests as it affects chemical storage that have jurisdiction over laboratory, safety, health, and environmental concerns;
- Coordinating the annual fume hood inspection and certification activities;
- Maintaining the mandatory records required by federal and state authorities.

Affected Employees (science faculty and instructional technicians) responsibilities include:

- Planning and conducting laboratory tasks in accordance with the departmental chemical hygiene procedures;
- Ensuring that students know and follow safety protocols as outlined in the Chemical Hygiene Plan and safety practices in each laboratory direction worksheets;
- Developing good personal chemical hygiene habits;
- Reporting all accidents and potential chemical exposures immediately to Program Deans;
- Training student workers (e.g., helpers, work-study personnel, and casual employees).

Academic Instructional Staff needs to ensure that Students:

- Wear required laboratory personal protective equipment and wear closed toed shoes in laboratories. The specific PPE is listed in the class experiment;
- Confine long hair and loose clothing;
- Follow safety practices as directed by instructional staff;
- Report any injury or chemical exposure immediately to instructional staff.

IV. PROCEDURES

A. Committee Formation and Meetings

The Chemical Hygiene Plan (CHP) has been developed to protect employees and students from health hazards associated with hazardous chemicals and potentially dangerous laboratory procedures. The CHP applies to departments at PCC which participate in laboratory use of hazardous chemicals. See Appendix B for a list of departments, classroom, and laboratory spaces covered by the CHP.

Each campus will have a Chemical Hygiene Committee to assist the Program Deans with developing and implementing the CHP and safety procedures. The committees will meet twice a year to perform inspections of the laboratories and stockrooms and to review the CHP.

The committees will have management, instructor, and staff representation. At a minimum each committee will have four members with additional members assigned at the Program Deans' discretion. The four required members are: the Chemical Hygiene Officer, a Program Dean, a faculty representative, and the Campus Lead.

B. Chemical User Rules and Procedures

The following rules provide general requirements for a chemical user's safety. The user shall:

- Understand the chemical hazards as determined from the SDS and other appropriate

references, and the procedures to follow when the chemical hazard is not known.

- Use appropriate safeguards for each chemical, including personal protective equipment (PPE).
- Know the location and proper use of all emergency equipment.
- Follow safety signs and chemical labels.
- Use proper personal hygiene practices.
- Follow College requirements for the purchase, transportation, and storage of chemicals.
- Use proper waste disposal procedures.
- Know emergency spill response procedures including evacuation routes and safe assembly areas. See the Evacuation Map posted in each laboratory and refer to the campus Emergency Guide.
- Only grounded electrical equipment may be used in a lab. Explosion proof wiring and motors shall be used when working with flammable materials.

1. Lock out/Tag out:

Procedures for lock out/tag out shall be utilized whenever work on electrical equipment occurs where unexpected energization may occur. Further information can be found in *Chapter 10 – Control of Hazardous Energy Plan*.

2. Lab Glassware:

- Shall never be used for beverages or food containers.
- Damaged glassware shall be properly discarded or repaired.
- Adequate hand protection should be used when inserting glass tubing into stoppers or hose connections.

Vacuum-Jacketed Glass Apparatus should be handled with extreme care to prevent implosions. Equipment such as Dewar flasks should be taped or shielded. Only glassware designed for vacuum work should be used for that purpose.

Broken lab glassware will only be disposed of in designated broken glass boxes. Broken glass boxes will be provided by the individual departments. Once a box is full, the inner bag will be closed, and the box lid taped shut. Due to its nature and composition, lab glass cannot be recycled but must be disposed of with regular trash. When a full box is ready for disposal, submit a Service Request Center (SRC) work order for Custodial to pick up and dispose of the full box.

3. Minimize Hazardous Chemical Exposure:

Develop and encourage safe habits to avoid unnecessary exposure to chemicals by any route. Do not smell or taste chemicals. Vent apparatus, which may discharge toxic chemicals (e.g., vacuum pumps, distillation columns, etc.), into local exhaust devices.

Choose chemicals for lab exercises carefully. Substitute hazardous chemicals with those that are less hazardous whenever possible.

Ensure all laboratory waste is disposed of properly. See Section IV, H for more information on waste disposal.

Eating, drinking, smoking, gum chewing, applying cosmetics and taking medicine in laboratories where hazardous chemicals are used or in prep areas is prohibited. Students may have foodstuff in their personal belongings, but the food/drink should not be eaten in the laboratory.

Laboratory refrigerators, ice chests, cold rooms, and ovens should not be used for food storage or preparation and should be labeled "NO FOOD and DRINKS." Refrigerators with food should be labeled "Food Only." Glassware or utensils should not be used for food when they are also used for laboratory operations.

Wash hands before eating or preparing food.

Wash areas of exposed skin before leaving the laboratory.

Practical jokes or other behavior which might confuse, startle, or distract another worker are prohibited.

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

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 end of day.

Always wear PPE appropriate to the task performed. See Section IV, C for more information on PPE.

Seek information and advice from the Chemical Hygiene Committee about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new hazardous operation.

Avoid working alone in a building. Do NOT work alone in a laboratory if the procedure being conducted is hazardous.

When leaving an operation unattended, leave lights on, place an appropriate sign on the door, and provide for minimizing contamination by toxic substances in the event of failure of a utility service (e.g., cooling water) to an unattended operation.

Be alert to unsafe conditions and see that they are corrected when detected.

4. Use of Hood:

- Keep materials as far as possible inside the hood (6 inches is suggested).
- Keep the working surface uncluttered; do not block ventilation slots at the back of the hood.
- Keep sash as low as possible but at the optimum height.
- Check the operation of the hood before use. Report any hood that is not working properly to Facilities Management Services (FMS) through the SRC. Tag the hood "Out-of-Service" and do not use it until repaired.
- Make sure airflow into the hood is maintained. Do not block vents or airflow.
- Always use a hood when working with volatile organic chemicals because room ventilation may not be adequate.
- Use the hood for operations:
 - which might result in release of toxic chemical vapors or dust
 - when working with any appreciably volatile substance with a Threshold Limit Value (TLV) of less than 10 PPM
 - if the chemical is rated as highly toxic
 - if chemicals give off strong noxious odors
- Keep material stored in the hood to a minimum.
- Leave the hood "On" when it is not in active use if toxic substances are present or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is "Off."
- Close the hood sash when not actively in use.

5. Accommodations

Any individual in need of workplace or classroom accommodations for a medical or disability-related reason should contact the HR ADA Coordinator, at adacoordinator@pcc.edu (for employees), or disability.services@pcc.edu (for students) to request reasonable accommodation. Consideration for reasonable accommodations will include an ADA Coordinator or Disability Services review of all documentation for medical exceptions, review of the space the employee or student will be occupying, and review of the activities the individual will be participating in while at PCC. For more information on employee accommodations, please refer to [HR's webpage](#). For more information on student accommodation, please refer to [Disability Services' webpage](#).

C. PPE and Apparel

Careful inspection of all protective equipment is to be done before use. Do NOT use defective protective equipment. Obtain functional protective equipment before proceeding with the task. Always review a chemical's SDS before use for specific PPE and clothing requirements.

For general use in laboratories, PPE requirements include:

- Eye protection worn when working with chemicals should meet the requirements of the ANSI Z87.1. Verify that goggles are marked with "Z87" prior to use. Type G (no ventilation) or H (indirect ventilation) goggles are appropriate. Safety glasses and direct ventilation goggles will not provide adequate protection from chemical splashes and must not be worn while handling chemicals.
- When working with corrosive liquids, also wear a face shield that is large enough to protect the chest, neck, and ears, as well as the face unless working in hood with the slash to lowest point to protect against splash.
- When working with hazardous chemicals wear gloves made of material known to be resistant to permeation by the corrosive chemical. Inspect the gloves before each use, wash them before removal, and replace them periodically.
- When engaging in hazardous chemical activity wear either high necked, calf or ankle length rubberized laboratory apron or long-sleeve, calf or ankle length, chemical or fire resistant laboratory coat (if appropriate and worn). Always wear long-sleeve and long-leg clothing; do not wear short sleeve shirts, short trousers, or short skirts.
- Always wear low-heeled shoes with fully covering "uppers;" do not wear shoes with open toes or with uppers constructed of woven materials.
- Remove laboratory coats immediately upon significant contamination. Generally these coats would be treated as hazardous waste as the Departments do not have hazardous material clothing launder services.

Whenever exposure by inhalation is likely to exceed OR-OSHA Permissible Exposure Limits (PEL) or other recommended exposure limits, a fume hood is to be used. If this is not possible, a correct type of respirator must be worn. Respirators should only be worn by employees who are a part of PCC's *Respiratory Protection Program (Health & Safety Manual Ch 17)* and have been trained and fit tested. The supervisor shall be consulted before doing any work requiring a respirator except for emergency spill response.

In the event of an infectious disease outbreak which impacts the supply of required PPE, each department will follow the procedures established by the Procurement Office to ensure a sufficient supply of PPE is on hand.

D. Chemical Procurement, Distribution, Storage, and Transportation

1. Procurement

All purchases of new laboratory chemicals **MUST** be reviewed by the Chemical Hygiene Officer before purchase. This is done by submitting the SDS for approval using the SDS management software. For additional information, see *Chapter 8: Hazard Communication Plan*. Highly toxic materials additionally require a Chemical Prior Approval Form to be submitted to the Chemical Hygiene Officer. (See IV, D, 6 for more information on the Chemical Prior Approval process.)

Staff or students are not to bring chemicals or equipment into the laboratory from an outside source (outside of PCC purchasing process) without the permission of the Program Dean and the Chemical Hygiene Officer.

Under no circumstance will gifts of chemicals be accepted from non-vendors or from other laboratories.

2. Distribution

Chemicals purchased through Science Departments are delivered directly to the campus where the order originated.

3. Stockrooms and Storerooms

Each campus laboratory must ensure proper storage of hazardous chemicals. The hazard class and compatibility must be known for each chemical. The chemical's SDS should aid with determining proper storage.

Each department is required to make a lab specific chemical storage schematic/document to ensure that chemicals are properly stored. This document should include special chemical segregation requirements and any lab specific chemical handling and storage requirements.

Chemicals are not to be stored in the fume hoods but should be on proper shelves or specially designed cabinets for flammables or corrosives.

The Department laboratory staff must inspect chemical storage areas at least annually for deterioration of contents and containers. Report the completion of the inspection to the Chemical Hygiene Officer.

Chemicals that show deterioration of contents or containers must be disposed of in accordance with the Waste Disposal section. Indications for disposal include:

- Slightly cloudy liquid
- Chemicals that are changing color
- Spotting on solids
- Caking of anhydrous materials
- Existence of solids in liquids or of liquids in solids
- Pressure build-up in bottles
- Reaching the expiration date set by manufacturer

4. Laboratory Usage for Instructional Activities

Hoods are to be used for laboratory instructional storage of volatile chemicals in laboratories.

Unused and unneeded chemicals must be returned to the storeroom or discarded in the appropriate manner.

5. Flammable Liquid Container Transfer and Storage

The safe storage and transfer of flammable liquids is determined by the flammable classification of the liquid, the amount being transferred, the prevention of spillage, use of approved containers, and proper use of bonding/grounding during the transfer of Class 1 flammables.

The following outlines the requirements for storage and transferring.

- a. Proper inside flammable liquid storerooms or fire cabinets designed for the storage of flammable materials listed as Class I, II, and III shall be used in the laboratory preparation areas
- b. Spill prevention and containment shall be used and spill kits available for rapid control and clean-up of flammable liquid spills.
- c. If transferring flammable liquids from the original container into secondary containers there are several safety protocols that must be followed based on the fire classification of the liquids.
 - i. Class I and II liquids with a flash point at or below 100F during transfer from approved metal containers must be grounded and bonded if the liquid is transferred to a metal container.
 - ii. Category III and IV liquids may be in 1-gallon approved plastic or glass and metal containers are required for quantities greater than 1 gallon up to 5 gallons. Five gallons and above require approved safety cans.

Questions about flammable liquid storage and container requirements can be found in Oregon OSHA Rule 1910.106 Table H-12 which limits quantities into specific types of containers based on flashpoint and boiling point. For assistance, contact EH&S.

6. Chemical Prior Approval Requirements

Each science department must maintain an inventory list of all the highly toxic materials that are stated to have the below hazards. This list must be submitted to the chemical hygiene committee.

Employees must obtain prior approval from the EH&S to proceed with a laboratory task if using new chemicals or chemicals that have been reclassified by the GHS / SDS system as having the following hazards: (See Appendix C for further explanation of the following categories)

Acute toxicity category 1 and 2

Germ cell mutagenicity as a:

- Category 1A Substances known to induce heritable mutations in germ cells of humans
- Category 1B: Substances which should be regarded as if they induce heritable mutations in the germ cells of humans

Reproductive Hazard as a:

- Category 1: Known or presumed human reproductive toxicants
- Category 2; suspected human reproductive toxicant and effects on or via lactation.

Carcinogen as a:

- Category 1 (includes 1A and 1B): Known or presumed human carcinogen

- Category 2: Suspected human carcinogens

Approval for use of chemicals with the above classification can be obtained by completing *Ch. 8 Form 1: Chemical Prior Approval* and submitting it to EH&S must be initiated by the laboratory instructors or instructional support tech (IST) and provided to EH&S.

The Chemical Hygiene Officer shall investigate incidents when Staff or Students become ill, suspect that they or others have been exposed, or otherwise suspect a failure of any of the equipment safeguards. This information shall be part of the overall Chemical Hygiene Committee assessment for chemical usage safety procedures.

If any of these categories of chemicals are approved then special procedures for handling is required under OSHA requirements in the laboratory and classroom laboratories:

Carcinogens:

- a. A current inventory of carcinogens shall be maintained as required by Oregon OSHA 437-002-0391(2)(k) and this inventory is part of the overall highly toxic materials listing required for each department. See Appendix D for PCC's Inventory of Carcinogens and other Specific Hazards.
- b. The carcinogens must be isolated in a specific work area, and access to that area must be restricted to designated staff or students.
- c. The use of carcinogens should be limited in the lab so that isolation techniques or a glove box can provide controlled access. Oregon OSHA 437-002-0391(2)(l) requires that ventilated apparatus such as laboratory type hoods, shall be tested at least annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.
- d. Records of personnel working with carcinogens must be kept and maintained for thirty years.
- e. Specific training must be provided regarding the cancer-causing possibilities of the substance, as well as decontamination procedures, emergency procedures, and the employees' role in recognizing situations that might result in the release of these substances. Documentation of such training should be available.
- f. Regulated areas must be posted with appropriate signs reading:
CANCER--SUSPECT SUBSTANCE AUTHORIZED PERSONNEL ONLY
- g. Ensure that the SDS safety procedures are reviewed and adapted to the laboratory operations handling, storage, spill response and disposal.

Acutely Toxic, Reproductive and Mutagenic Chemicals:

- a. To minimize the exposure to these toxic substances by any route using all reasonable precautions.
- b. Always use a fume hood or other containment device for procedures which may result in the generation of aerosols or vapors containing the substance; trap released vapors to prevent their discharge with the hood exhaust.
- c. Personal protection: Always avoid skin contact by use of gloves and long sleeves (and other protective apparel as appropriate). Always wash hands and arms immediately after working with these materials.

- d. Prevention of spills and accidents: Be prepared for accidents and spills. Store breakable containers of these substances in chemically resistant trays. Work and mount apparatus above such trays or cover work and storage surfaces with removable, absorbent, plastic backed paper.
- e. Waste: Obtain proper waste handling instructions from EH&S.

E. Signs and Labels

The PCC Emergency Guide shall be prominently posted in all laboratories. This provides the medical emergency plan and all specific emergency and non-emergency telephone numbers. Beside the Emergency Guide shall be posted the Hazardous Waste Emergency sheet listing emergency contact information along with the locations for fire extinguishers, fire alarm pulls, and spill kits specific to the laboratory.

Evacuation Maps show the locations of emergency showers, eyewash stations, fire extinguishers, and first aid kits. The maps will be prominently posted in labs and chemical preparation areas.

Signs warning of special or unusual hazards will be posted where such hazards exist.

Additional Hazard Notifications

NFPA diamonds will be posted on all doors leading to chemical storage areas including building exterior doors. The information displayed on the diamonds will represent the highest hazard rating present for any given chemical in the storage area.

Each lab entrance will have postings communicating the PPE requirements for the space, any access restrictions, and restrictions on consuming food or drink in the lab.

Other standard signs to be posted in the lab room should include posters displaying GHS pictograms and hazard classifications, signs identifying waste collection locations, emergency gas shut offs, and emergency equipment such as safety showers and eyewash stations.

Chemical Labels

When chemicals are distributed to the ordering department, responsibility to verify and maintain clear and legible labels is the responsibility of personnel working in the affected area. It is PCC' policy that at a minimum, no chemical container will be distributed without a label meeting the following criteria:

1. Labeled clearly and legibly in English. The label will identify the contained chemical and the hazards it presents using recognized sign/symbols for hazards. All chemicals received after December 31, 2015, shall have GHS compliant labeling including product identifier, a signal word, a hazard statement, precautionary statement, pictogram, suppliers name, address, and telephone number. See Appendix C for an explanation of some GHS Hazard ratings.
2. All chemical containers when received will be marked with the date received. All unstable chemicals, such as anhydrous ether, will be marked with the date they were opened.
3. When it is necessary to re-label a primary chemical container, it will be done immediately, and will contain the information of the original label. If at all possible, manufacturer's labels will NOT be covered over, defaced or removed. Laboratory operations may require transferring chemicals from the original labeled container to a secondary container (e.g., beaker, flask, or bottle) for laboratory use and NO secondary label is required by OSHA rules. It is important that the laboratory staff however not lose

information as to what the chemicals are for proper disposal and any possible spill response.

F. Laboratory Facilities

1. Design:

FMS will assist the Chemical Hygiene Officer, the Committee, and Environmental Health and Safety to ensure that proper laboratory facilities are designed and installed.

The laboratory facility shall have:

- An appropriate general ventilation system with air intakes and exhausts located to avoid intake of contaminated air
- Adequate, secure, well-ventilated stockrooms and storerooms
- Laboratory hoods and sinks
- Other safety equipment including eyewash fountains and drench showers.

All laboratories will be equipped with eyewash fountains. These must be located so they can be reached from any point in the laboratory, as specified in American National Standards Institute (ANSI) Z358.1.

Prompt repair will be completed to any eyewash or shower that does not meet the water flow requirements of ANSI Z358.1

Access to eyewash fountains and safety showers must not be restricted or blocked by storage of objects or in any other way.

2. Maintenance:

Upon the establishment of a new laboratory, hood ventilation tests must be conducted to ascertain the flow rates and the air evacuation time. Ventilation system test results shall be compared to the design and installation specifications for face velocity or total volume of air flow. All fume hood equipment will be selected to ensure that fume hoods will meet ANSI Z9.5 certification requirements of 80 to 120 fpm face velocity.

Fume hoods will be classified as either Group 1 or Group 2 equipment. Group 1 equipment is any equipment that is attached to the building and/or building system. Group 2 equipment have their own systems and are not attached to the building. An accurate list of all hoods, types, brand, model, and location shall be maintained by FMS. This equipment includes all specific devices for containment exhaust control systems.

All Group 1 fume hoods shall be certified annually to ANSI Z9.5 specifications by a competent contractor. The certification process includes flow rate testing by an air velocity meter as well as visual smoke tests to confirm there are no back currents or dead spots. Records of the testing shall be maintained for at least five years. Any hood not passing inspection should be taken out of service immediately and not be used until the hood has passed inspection. FMS will be notified of any mechanical issues observed during the certification process so that the proper repairs/adjustments can be made.

It is the responsibility of PCC to purchase parts and to replace the unit in a timely fashion so as not to endanger the health and well-being of staff or students or place the facility at risk.

The quality and quantity of ventilation should be evaluated on installation, regularly monitored (at least once a year), and re-evaluated whenever a change in local ventilation device is made. In newer hoods continuous monitoring is part of the hood control and if

there is a problem with the flow it is up to the department to contact FMS or Service Request Center for repairs.

Procedures for lock out/tag out shall be utilized whenever work on electrical equipment occurs where unexpected energization may occur. Further information may be found in *Chapter 10: Control of Hazardous Energy*.

Fire extinguishers are inspected monthly, annually certified, and structurally evaluated as scheduled by FMS and Fire and Life Safety.

G. Spills and Accidents

PCC Emergency Guides with written emergency procedures shall be posted at work areas where there is a potential for an emergency. All employees must be trained and instructed in these procedures.

Incidental spills of chemicals in laboratories or laboratory preparation areas must be cleaned up immediately under the supervision of persons who are trained in spill response, knowledgeable in the hazards involved, and knowledgeable of the precautions to be taken.

Incidental spills are characterized by small volume (less than 1 gallon) of a known substance that doesn't present a significant health and safety hazard to clean up.

PCC staff working with chemicals in laboratory and laboratory preparation areas must be knowledgeable of the hazards and physical & chemical properties of the chemicals that they handle or work with to safely assess or clean up a spill.

Basic steps of incidental spill response are:

- Alert People nearby to stay away.
- Assist injured, contaminated people
- For any chemical spills resulting in injuries or property damage, call the Public Safety Emergency Number at 971-722-4444.
- Get spill clean-up kit
- Put on personal protective equipment including chemical splash goggles and chemical resistant gloves.
- Contain the spill
- Clean up spill.
- Notify Department management and EH&S.

For spills of unknown materials, large spills (greater than 1 gallon) and spill of any amount containing highly toxic, volatile, or Class 1 flammable (flashpoint of 100 F or less) chemicals or infectious agents, Departmental staff should follow the procedures outlined in *Chapter 7: Hazardous Material Emergency Response Plan*. Individuals responding to a large or particularly hazardous spill should perform the following initial response steps:

- Alert people nearby to evacuate the area.
- Assist injured, contaminated people
- Contain or confine the spill to stop from spreading only if it is safe to do.
- Close the doors or use other methods to isolate the area.
- Notify Public Safety Emergency Number at 971-722-4444 or 911.
- Tell the dispatcher the source or cause of the spill, the contents of the spill, volume, location, and the extent of the evacuation you think is necessary.
- Public Safety will contact the local Fire Department, EH&S, and/or hazardous spill clean-up contractors as necessary.

Each department must have spill supplies available for any type of spills that could occur.
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Suggested supplies include:

- Personal protective equipment: chemical splash goggles, gloves
- Spill clean-up signs
- Absorbent socks, drain blockers
- Absorbent pads, pillows, loose absorbents, and/or neutralizers
- Non-sparking scoops and scrapers, mini broom/dustpan
- 5-gallon bucket, heavy thickness polyethylene bags

H. Waste Disposal

The intention of the waste disposal program for laboratories is to minimize the quantity of hazardous chemical waste and to dispose of laboratory waste in a manner that ensures minimal harm to people, other organisms, and the environment. Efforts will be made to use smaller quantities of materials whenever possible or to substitute materials less hazardous. See: *Chapter 21- Regulated Waste Program* for more information.

1. Waste Management Procedures:

All discontinued stock chemicals and cleaners must be submitted for disposal with the department's hazardous waste regardless of waste classification.

Chemicals must not be poured down the drain or put in the trash.

Laboratory generated waste will be collected in waste containers and submitted with the department's hazardous waste.

Treatment (pH neutralization) or drain disposal of laboratory waste is prohibited without EH&S permission.

To prevent leaks and spills, containers to hold laboratory waste must be compatible with the waste, maintained in good condition and have tight fitting lids.

Do not re-purpose empty chemical containers to hold laboratory waste due to chemical compatibility issues.

Waste containers must be closed at all times except when adding or removing waste even if stored in the fume hood.

Waste containers should not be filled more than 80 to 90% capacity.

Waste containers must be labeled as waste with a description of the waste contents and the hazard characteristics such as flammable, corrosive, or poison.

Do not consolidate chemically incompatible waste from separate waste streams. Mixing incompatible wastes could result in unintended chemical reactions that could result in heat generation, pressure increases, or toxic by-products.

Laboratory waste containers must be stored in a labeled designated area of the department and have secondary containment. Chemically incompatible wastes should be stored separated by distance or with separate secondary containment.

2. Frequency of Disposal:

Hazardous lab waste should be immediately placed in the designated department Satellite Accumulation Area.

Contact EH&S to arrange for disposal at a minimum of at least every term.

Any stored hazardous waste must be inspected once a week using the *Chapter 21 Form 1*:

Satellite Accumulation Area Inspection Form. The completed inspections must be kept for three years and be available for EH&S to review.

I. Housekeeping, Maintenance, and Inspections

Eye wash fountains and safety showers must be activated and inspected monthly

Respirators must be inspected by the user each month and prior to use. The manufacturer's cartridge change schedule must be followed. User fit testing will be conducted according to *Chapter 17: Respirator Protection Plan*.

Access to emergency equipment, showers, eyewashes, and exits should never be blocked, not even by a temporarily parked chemical cart.

Work areas, especially laboratory benches, must be kept clear of clutter.

Chemicals should be placed in their assigned storage areas at the end of each workday.

Contents of all unlabeled containers are to be identified, properly labeled, and stored or disposed of at the end of each workday.

Wastes should be properly labeled and kept in their closed containers.

Spills are to be properly cleaned up; the spilled chemical and clean up materials are to be properly disposed; and Environmental Health and Safety is to be contacted for disposal information.

Working surfaces and floors should be cleaned regularly.

Chemicals are not to be stored in aisles or stairwells, on desks or laboratory benches, on floors or in hallways.

Any lab equipment or furniture that is to be offered up for surplus or will be disposed must be properly decontaminated before it can be removed from the lab. The decontamination process shall include all steps necessary to deem the equipment or furniture safe to be handled without PPE.

Formal housekeeping and chemical hygiene inspections will be conducted annually by the Chemical Hygiene Officer with assistance from the campus Chemical Hygiene Committee or Campus Lead. The inspections will be documented using *Form 1: Laboratory and Storeroom Inspection Checklist*. These inspections will then be reviewed during an upcoming Chemical Hygiene Committee meeting.

J. Medical Program

There may be a time when employees or supervisors suspect that an employee has been exposed to a hazardous chemical to a degree and in a manner that might have caused harm to the employee. If the circumstances suggest a reasonable suspicion of exposure, the exposed employee is entitled to a medical consultation and, if so, determined in the consultation, also to a medical examination at no cost and with no loss of workday time attributed to the exposed employee.

1. Criteria for Reasonable Suspicion of Exposure

The College's policy is to investigate all employee reported incidents in which there is even a remote possibility of an employee's over-exposure to any toxic substance.

Events or circumstances that might reasonably constitute over-exposure include:

- A hazardous chemical leak, spill, or otherwise rapid release in an uncontrolled

manner.

- A laboratory employee has direct skin or eye contact with a hazardous chemical.
- Monitoring, routine or otherwise, suggests that there could have been an exposure above the action level or PEL if there is no action level, for a chemical for which a substance-specific standard has been established.
- A laboratory employee manifests symptoms such as headache, rash, nausea, coughing, tearing, irritation or redness of eyes, irritation of nose or throat, dizziness, loss of motor dexterity or judgment, etc.
- Some or all the symptoms disappear when the person is taken away from the exposure area and breathes fresh air.
- The symptoms reappear soon after the employee returns to work with the same hazardous chemicals.
- Two or more persons in the same laboratory work area have similar complaints.

All complaints must be followed up by the supervisor/manager, no matter what the ultimate disposition may be. If no further assessment of the event is deemed necessary, the reason for that decision should be included in the documentation. If the decision is to investigate, a formal exposure assessment will be initiated.

2. Exposure Assessment

PCC will measure employee's exposure to any regulated substance that requires monitoring if there is reason to believe that exposure levels exceed the action level for that substance.

In the case of an emergency, an exposure assessment is conducted after the exposed employee has been treated. Note: the purpose of an exposure assessment is to determine that there was, or was not, an exposure that might have caused harm to one or more employees and, if so, to identify the hazardous chemical or chemicals involved.

Unless circumstances suggest other or additional steps, the following actions constitute an exposure assessment:

- a. Interview the complainant and the exposed person, if not the same person.
- b. List the essential information about the circumstances of the complaint, including:
 - The chemical under suspicion.
 - Other chemicals used by an exposed employee.
 - All chemicals being used by others in the immediate area.
 - Other chemicals stored in that area.
 - Symptoms exhibited or claimed by the exposed employee.
 - Whether control measures, such as personal protective equipment and hoods were properly used.
 - Whether any air sampling or monitoring devices were in place, and if so, whether the measurements obtained from these devices were consistent with other information.
- c. Monitor or sample the air in the area for suspect chemicals.
- d. Determine how the exposed employee's symptoms compare to the symptoms described in the SDS or other pertinent scientific literature for each of the identified chemicals.
- e. Determine whether the present control measures and safety procedures are adequate.

3. Notification of Results of Monitoring

PCC will, within 15 working days of receipt of monitoring results, notify the employee of the results in writing either individually or post in a location that is accessible to employees.

4. Medical Consultation and Examination

The details of medical consultations and examinations are determined by the physician. The purpose of a medical consultation is to determine whether a medical examination is warranted.

When warranted, an employee should receive a medical examination from or under the direct supervision of a licensed physician who is experienced in treating individuals of chemical overexposure. The medical professional should also be knowledgeable about which tests or procedures are appropriate to determine if there has been an over-exposure; these diagnostic techniques are called "differential diagnoses."

The following provisions apply to medical consultations and examinations:

- a. Provide the physician with:
 - The identity of the hazardous chemical or chemicals to which the employee may have been exposed.
 - The exposure conditions.
 - The signs and symptoms of exposure the exposed employee is experiencing, if any.
 - Safety Data Sheets (SDS) for hazardous chemicals.
- b. Ordinarily, a physician will furnish to the employer in written form:
 - Recommendations for a follow-up, if determined to be pertinent.
 - A record of the results of the consultation and, if applicable, of the examination and any tests that were conducted.
 - Conclusions concerning any other medical condition noted that could put the employee at increased risk.
 - A statement that the employee has been informed of both the results of the consultation or examination, and of any medical condition that may require further examination or treatment.

These written statements and records should not reveal specific findings that are not related to the occupational exposure.

5. Documentation

All memos, notes and reports related to a complaint of actual or possible exposure to a hazardous chemical are to be maintained as part of the record.

6. Notification

An employee shall be notified of the results of any medical consultation or examination with regard to any medical conditions that exist or might exist as a result of over-exposure to a hazardous chemical.

V. TRAINING

A. Initial Training

Each laboratory employee shall receive training at the time of initial assignment to a work area where hazardous chemicals are present and prior to an assignment involving a new

exposure situation. New employees are required to attend the New Employee Safety Orientation (NESO), which includes Hazard Communication training, use of the PCC SDS and Chemical inventory database, and fire extinguisher use. Other work area specific training is conducted by the department Manager/Supervisor and is recorded using *Chapter 1 Form 1: New Employee Safety Training Checklist*. All training for new or non-routine chemical exposure will be conducted by the department Manager/Supervisor and recorded using *Chapter 8 Form 2: New Chemical and Non-routine Chemical Exposure*.

B. Refresher Training

Training on the Chemical Hygiene Plan will be conducted for all employees when there are substantial changes to the Plan. The information that must be covered in this refresher training includes:

- The contents of the OR-OSHA Chemical Hygiene Standard (1910.1450).
- The permissible exposure limits for OR-OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OR-OSHA Standard.
- Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.
- The location and availability of reference materials on the hazards, safe handling, storage, and disposal of hazardous chemicals in the laboratory including but not limited to the SDS.
- Methods and observations used to detect the presence or release of a hazardous chemical.
- The physical and health hazards of chemicals in the laboratory work area.
- The measures that an employee can take to protect himself or herself from the hazards, including personal protective equipment, appropriate work practices, and emergency procedures.
- The location and details of the Chemical Hygiene Plan.
- The contact information for the Chemical Hygiene Officer or Committee members.

VI. RECORD KEEPING

Safety Data Sheets (SDS): SDS and chemical inventories are maintained in the online computer software system accessed through the College Intranet or the desktop icon on PCC computers. Each lab must have a back-up system of paper copies or a USB drive of that location's inventory. The SDS program or dated inventory is required to be maintained for at least thirty years.

Records of air monitoring results or exposure assessments will be maintained by EH&S. Employees will have access to the air monitoring results. These records must be maintained for at least thirty years.

Radiation exposure monitoring results will be kept by EH&S and departments where monitoring is done. These records must be maintained for at least thirty years. Each individual affected will be provided a copy of the results.

Medical consultation and examination results will be maintained by the health care provider and a summary statement will be provided to the individual employee with a copy maintained in the employee's confidential medical file by Human Resources for thirty years plus employment time.

Ventilation system certification and maintenance activities will be maintained by both the

FMS and EH&S. Fume hood certifications will be maintained for five years.

Training Records will be maintained by the department in the employee's file.

Hazardous waste and other environmental report records will be maintained by EH&S for the years required by each of the different regulations, with the exception of Satellite Accumulation Area Inspection forms which will be maintained by the employee managing that area.

Review and revision of the Chemical Hygiene Plan data will be maintained by EH&S. At least three years of review and revision records are maintained.

Laboratory and Storeroom Inspection Checklists will be maintained by the Chemical Hygiene Officer for three years.