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: **June 2019**

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 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 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 procedures to achieve a safe work environment. 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 or instructor.

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

Science Division Deans have the ultimate responsibility for implementation, enforcement, and continuing support of the Chemical Hygiene Plan (CHP) in the departments that they oversee. The Science Departments have the following overall specific duties to perform:

- Assign knowledgeable staff to their campus Chemical Hygiene Committee and call additional meetings as needed.
- Act as the Committee Chairperson or appoint another member to be Chairperson.
- Ensure that all chemicals in use and storage are evaluated for possible hazards, special controls under cancer/reproductive or high toxicity OR-OSHA requirements and provide final approval/declination as appropriate.

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

Chemical Hygiene Officer responsibilities include:

- Monitor the procurement and disposal of chemicals used in laboratories.
- Ensure that appropriate inspections are conducted and documented.
- Assist departments to determine the appropriate types of personal protective equipment and safety equipment needed to safely handle hazardous chemicals.
- Know the current legal requirements concerning regulated substances.
- Perform annual inspections, with the assistance of the department designee, of lab classrooms and prep spaces to ensure compliance with the Chemical Hygiene Plan.

Chemical Hygiene Committee responsibilities include:

- Develop and implement chemical hygiene procedures and practices that are OR-OSHA compliant, meet ANSI standards, and support industry best practices.
- Review the procurement and use of chemicals used in laboratories.
- Seek ways to improve lab safety so as to assist in the review and revision of the Chemical Hygiene Plan.
- Assist the Chemical Hygiene Officer in the inspection of each department to ensure compliance with the Chemical Hygiene Plan.

Committee Chairperson responsibilities include:

- Coordinate scheduling of the Chemical Hygiene Committee meetings.
- Organize and distribute meeting agendas.
- Select a committee member to take minutes for each meeting.

Department Designee (as determined by the Division Dean) is responsible for chemical hygiene in his/her department and is to:

- Consult with the Chemical Hygiene Officer before any purchase of new hazardous chemicals by faculty or instructional technicians.
- Work 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.
- Make sure that staff and students know and follow the chemical hygiene procedures and wear personal protective equipment when required.
- Verify that chemical hygiene, housekeeping, and emergency equipment inspections are done each term and submitted to the Chemical Hygiene Officer.

Environmental Health and Safety is responsible to:

- Designate an EH&S employee to serve as the PCC Chemical Hygiene Officer.
- Assist 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.

- Work 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.
- Represent the College in its relationship with the safety regulatory agencies (e.g., OR-OSHA, DEQ, and Fire Marshal) that have jurisdiction over laboratory, safety, health, and environmental concerns.
- Coordinate the annual fume hood air flow inspection and certification.
- Maintain the mandatory records required by federal and state authorities, including but not limited to waste documentation, ventilation certification, and exposure assessments.

Staff (faculty and instructional technicians) are responsible to:

- Plan and conduct laboratory tasks in accordance with the departmental chemical hygiene procedures.
- Make sure that students know and follow safety protocols as outlined in the Chemical Hygiene Plan and safety practices in each laboratory activity.
- Develop good personal chemical hygiene habits.
- Report all accidents and potential chemical exposures immediately to Department Division Dean.
- Train student workers (e.g., helpers, work-study personnel, and casual employees) in proper chemical handling and lab safety.

Academic Instructional Staff needs to ensure that Students are responsible to:

- Wear required laboratory personal protective equipment and wear closed toed shoes in laboratories.
- 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 Division Deans with developing and implementing the CHP and safety procedures. The committees will meet at a minimum, twice a year to discuss inspections of the laboratories and stockrooms, to review the CHP, and to respond to any safety concerns that may be raised by faculty, students, or PCC staff.

The committees will have management, instructor, and staff representation. At a minimum each committee will have four members with the addition of more at the Division Dean's

discretion. The four required members are: the Chemical Hygiene Officer, the Division Dean for that campus, a faculty representative, and an Instructional Support Technician.

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 Safety Data Sheets (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 PCC 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.

Lockout/Tagout:

Procedures for lockout/tagout 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*.

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 lined with a heavy plastic liner. 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.

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 apparatuses, which may discharge toxic chemicals (e.g., vacuum pumps, distillation columns, etc.), into local exhaust devices such as hoods or snorkels.

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

Ensure all laboratory waste is disposed 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 food or drinks 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 intended for food should be labeled “Food Only.” Glassware or utensils should not be used for food when they are also used for laboratory operations.

Wash areas of exposed skin before leaving the laboratory.

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

Use of Hood:

- Keep materials as far as possible inside the hood (6 inches is suggested).
- Keep working surface uncluttered; do not block ventilation slots at back of hood.
- Keep sash as low as possible but at the optimum height.
- Check operation of 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 until repaired.

- Make sure airflow into 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:
    a. which might result in release of toxic chemical vapors or dust
    b. when working with any appreciably volatile substance with a Threshold Limit Value (TLV) of less than 10 PPM
    c. if the chemical is rated as acutely toxic
    d. 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.

C. PPE and APPAREL

Whenever the concentration of airborne contaminants is likely to exceed OR-OSHA Permissible Exposure Limit (PEL) or another recommended exposure limit, 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 medically qualified, trained, and fit tested. The supervisor shall be consulted before doing any work requiring a respirator except for emergency spill response.

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 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, wear goggles or safety glasses as well as 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 chemical. Inspect the gloves before each use 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.

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. Highly hazardous chemicals 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 Division Dean and the Chemical Hygiene Officer.

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

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 SDS should provide assistance with 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

Fume hoods are to be used for laboratory instructional storage of volatile chemicals in laboratories during designated lab periods.

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 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 100ºF 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.

Departments must obtain prior approval from the EH&S before purchasing 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 *Chapter 8 Form 1: Chemical Prior Approval* and submitting it to EH&S. The process must be initiated by the laboratory instructors or Instructional Support Tech (IST).

The Chemical Hygiene Officer shall investigate incidents when employees 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 category of chemicals are approved then special procedures for handling is required under OR-OSHA requirements in the laboratory and classroom laboratories:

Carcinogens:

- 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.
- The carcinogens must be isolated in a specific work area, and access to that area must be restricted to designated staff or students.
- The use of carcinogens should be limited in the lab through isolation techniques or a glove box to 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.
- Records of personnel working with carcinogens must be kept and maintained for thirty years.
- 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.
- Regulated areas must be posted with appropriate signs reading:

  CANCER--SUSPECT SUBSTANCE AUTHORIZED PERSONNEL ONLY

- 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:

- To minimize the exposure to these toxic substances by any route using all reasonable precautions.
- Always use of 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.
- 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.
- 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.
- 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.

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's policy that at a minimum, no chemical container will be delivered 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/symbol 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 EH&S 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 so as 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.

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 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 & 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 one liter) 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 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 liter) 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 not clean up but evacuate.

- Alert people nearby to evacuate the area.
- Assist injured, contaminated people
- Contain the spill to stop from spreading only if it is safe to do. Close the doors to the area.
- Notify Public Safety Emergency Number at 971-722-4444 or 911.

- Tell the dispatcher the source or cause of spill, the contents of spill, volume, location and the extent of the evacuation you think is necessary.
- Public Safety will contact Fire Department, EH&S, and hazardous spill clean-up contractors as necessary.

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

- Personal protective equipment: chemical splash goggles, gloves
- Spill clean-up signs
- Absorbent socks, drain blockers
- Absorbent pads, pillows, loose absorbents or neutralizers
- Non-sparking scoops and scrapers, mini-broom/dust pan
- 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 which are less hazardous. See: *Chapter 21- Regulated Waste Program* for more information.

1. Waste Management Procedures:

All stock chemicals and cleaners that are no longer useful (expired, contaminated, no longer needed, etc.) must be submitted for disposal with the department's hazardous waste regardless of hazard classification.

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 repurpose empty chemical containers to hold laboratory waste unless the containers have been properly rinsed 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 all applicable hazard characteristics.

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 placed in the designated department Satellite Accumulation Area (SAA) until pick up for disposal is arranged with EH&S.

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 and Inspections

All eyewash, drench hoses, and shower facilities must be adequately maintained and should be tested and activated weekly to flush the supply and line and to verify proper operations. Self-contained units should be maintained in accordance with the manufacturer's instructions. Each department shall keep a log recording these tests.

Respirators must be inspected prior to use. The manufacturer's cartridge change schedule must be followed. Training and 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.

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

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

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 with minimal PPE.

Formal housekeeping and chemical hygiene inspections will be conducted annually by the Chemical Hygiene Officer with assistance from the campus Chemical Hygiene Committee. The inspections will be documented using *Form 1: Laboratory and Storeroom Inspection Checklist*. Within two weeks of the completed inspection, the department will receive a copy of the inspection form along with any notes detailing areas of improvement. These inspections will then be reviewed during a 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 of 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 potential exposure incidents 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 chemical exposure assessment will be performed.

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 also 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

If a potential exposure has occurred and an exposure assessment was performed, 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 over-exposure. 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. The employee or employee’s supervisor will 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 both of 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 by the department as part of the employee's record for thirty years after their employment ends.

6. Notification

An employee shall be notified by the physician 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

1. 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.*

2. 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 by EH&S 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 locations 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 examinations 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.

Workplace injury records and OSHA 300 injury/illness log records are maintained by Risk Services and produced with requested be OR-OSHA. These records must be maintained for at least five years.

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 employees 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.