Chemical Hygiene Plan

Chemical Hygiene Officer (RVC)

Chemical Hygiene Officer (RWC)

Director of Risk Management

Updated 10/31/2024

1. Rogue Community College (RCC) is committed to the safety of all employees while working in a science lab, science classroom, or science chemical storage areas (referred to as 'labs' in this document). RCC is also committed to complying with all applicable federal, state, and local health and safety codes and regulations. The following Chemical Hygiene Plan (CHP) has been established to ensure all affected employees receive the necessary information and training. All RCC Science Department employees will participate and comply with all sections of the CHP. The RCC Chemical Hygiene Committee (CHC) will review, update, and maintain the written CHP.

2. Introduction

    a. The intent of the CHP is to protect employees from chemical health hazards by maintaining the lowest practical level of exposure to hazardous chemicals and to comply with the Oregon OSHA Standard for Occupational Exposures to Hazardous Chemicals in Laboratories, Division 2/Z Toxic and Hazardous Substance Section 1910.1450.

    b. The CHP contains and references policies, procedures, programs, and work practices necessary to protect Science Department employees working in labs. The CHP has been developed based on the best laboratory practices identified in various sources, most notably in "Prudent Practices for Handling Hazardous Chemicals in Laboratories," published by the National Research Council 2011. It is not intended to be all-inclusive. It cannot address specific chemical handling procedures for all chemicals but describes general protective guidelines for working with hazardous chemicals or categories of chemicals in labs.

    c. Classes or labs that use chemicals with particularly hazardous characteristics will need to develop specific standard operating procedures (SOPs) approved by the CHC to supplement the CHP as an appendix.

3. Additional References

    a. American National Standards Institute (ANSI) Z358.1 Emergency Eyewash and Shower Standard

b. American National Standards Institute (ANSI) Z9.5. Laboratory Ventilation Standard

c. American National Standards Institute (ANSI) Z87.1 Safety Glasses Standard

d. Oregon OSHA 1910.1200 Hazard Communication

e. Oregon OSHA Division 2/E, Means of Egress

f. Oregon OSHA Division 2/H, Flammable Liquids

g. Oregon OSHA Division 2/I, Personal Protective Equipment

h. Oregon OSHA Division 2/K, Medical, and First Aid

i. Oregon OSHA Division 2/Z, Toxic and Hazardous Substances

j. Oregon Department of Environmental Quality (DEQ) – Resource Conversation and Recovery Act

k. Oregon Revised Statute ORS 459.386 – ORS 459.405 Infectious Waste

l. NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals

4. Additional RCC Policies and Programs

a. RCC Autoclave Program

b. RCC Bloodborne Pathogens Program

c. RCC Chemical Hazard Communication Program

d. RCC Electrical Safety Program

e. RCC Fire and Life Safety Program

f. RCC Hearing Protection Program

g. RCC Infectious Waste Program

h. RCC Laboratory Fume Hood and Local Exhaust Ventilation Program

i. RCC Lockout/Tagout Program

j. RCC Respiratory Protection Program

k. RCC Universal, Hazardous, and Electronics Waste Program

5. Roles and Responsibilities

a. Chemical Hygiene Officer (CHO)
    i. Is an employee(s) designated by RCC and qualified by training or experience to provide technical guidance in the development and implementation of the provisions of the CHP. The CHO will:
        1. Coordinate with the Director of Risk Management to schedule quarterly CHC meetings.
        2. Keep the CHC informed on the continued implementation of the CHP and bring attention to department-wide issues affecting lab safety.
        3. Review the CHP, at least annually, with the CHC and recommend revisions and improvements based on regulatory changes, external or internal lessons learned, and best practices designed to improve the CHP's lab practices.
        4. Provide expert guidance to the Science Department on chemical safety and serve as a point of contact for inquiries from Science Department employees.
        5. Serve as a resource for developing (SOPs) (appendixes).
        6. Work with the Director of Risk Management to administer the safety training programs for all Science Department employees covered under the CHP.
        7. Work with Science Department Lab Technicians to maintain an accurate and update to date chemical inventory.

b. Director of Risk Management
    i. Coordinate with the CHO's to schedule quarterly CHC meetings.
    ii. Provide administrative support to the CHC, including but not limited to organizing and distributing meeting agendas and meeting minutes.
    iii. Work with the CHC to develop, implement, and maintain compliance with appropriate chemical hygiene policies and procedures.
    iv. Review exposures, near misses, and accidents/injuries and recommend follow-up actions where appropriate to the CHO and CHC.
    v. Maintain records of exposure monitoring and medical examinations.
    vi. Advise on the acquisition, testing, and maintenance of fume hoods, emergency showers, eyewash stations and other safety equipment in labs where hazardous chemicals are used.
    vii. Stay informed of plans for renovations or new lab construction projects and serve as a resource in assisting with the design and construction

process in partnership with the Director of Facilities Management, Planning, and Construction (FMPC).

viii. Establish procedures to monitor the use and disposal of chemicals used in the lab.
ix. Establish periodic in sections to ensure appropriate lab chemical hygiene and housekeeping practices are conducted.
x. Coordinate all necessary inspections of fire extinguishers, safety showers, eyewash stations and other safety equipment, and chemical fume hoods according to existing RCC programs and Oregon OSHA requirements.
xi. Communicate the current legal requirements relating to employee safety and handling of hazardous chemicals to the CHC.
xii. Work with the Science Department to maintain their chemical inventory. Including working with the Science Department to conduct an annual inventory of all chemical storage areas.

c. Chemical Hygiene Committee (CHC)
   i. The CHC will work to develop and implement appropriate chemical hygiene policies and practices.
   ii. The CHC is responsible for reviewing and approving any changes to the CHP at least annually.
   iii. The CHC will discuss exposures, near misses, and accident/injury reports that have occurred in RCC labs as reported by Risk Management and as necessary.
   iv. The CHC will meet quarterly or sooner as needed.

d. Science Lab Employees
   i. Each science lab employee is responsible for planning and conducting all lab operations in accordance with the CHP and individual SOPs, developing good chemical hygiene and housekeeping habits, selecting and using appropriate PPE, reporting safety deficiencies to their supervisor, the CHO, and the Director of Risk Management, and completing all assigned safety training.
   ii. Each Science lab employee will ensure that students know and follow safety protocols outlined in the CHP in each lab activity.

e. Chemical Hygiene Committee Members:
   i. Chemical Hygiene Officer (RVC) (Science Faculty Member) Co-Chair
   ii. Chemical Hygiene Officer (RWC) (Science Faculty Member) Co-Chair
   iii. Director of Risk Management Co-Chair
   iv. Risk Management Specialist
   v. RVC Science Lab Technician
   vi. RWC Science Lab Technician
   vii. Faculty Science Department Designee
   viii. Director of FMPC

6. Hierarchy of Controls

    a. The hierarchy of controls prioritizes intervention strategies based on the premise that the best way to control a hazard is to systematically remove it from the workplace rather than relying on employees to reduce their exposure. The measures that may be used to protect employees (listed from most effective to least effective) are engineering controls, administrative controls, work practices, and PPE. Engineering controls, such as chemical fume hoods (CFH), physically separate the employee from the hazard. Administrative controls, such as employee scheduling, are established by management to help minimize the employees' exposure time to hazardous chemicals. Work practice controls are tasks performed in a designated way to minimize or eliminate hazards.

    b. Engineering Controls
        i. If a chemical hazard cannot be eliminated, the next best strategy for its control is at its source using engineering controls. Engineering controls are devices or actions that automatically isolate or physically limit exposure to a hazard, thereby reducing the risk to employees. For this reason, engineering controls are often considered the first line of defense for reducing exposure to hazardous substances. Engineering controls must only be used as designed and not be modified unless appropriate testing and certification clearly indicate that the protection of employees will be equal to or greater than the original protection afforded by the control device. RCC utilizes the following engineering controls in the Science Department:
            1. A CFH is a device integrated into a lab's ventilation system, which isolates airborne contaminants from lab employees through unidirectional, exhausted airflow. Typically considered the primary engineering control for hazardous chemicals in the lab, CFHs must be effectively used and maintained to afford the user proper containment of hazardous airborne contaminants. For specifics on the proper use and maintenance of CFHs, please refer to the RCC Lab Fume Hood and Local Exhaust Ventilation Program. The following general guidelines must be observed when using a CFH:
                a. Use a ducted CFH for work with hazardous gases, volatile or potentially airborne hazardous substances, malodorous chemicals, and OSHA Particularly Hazardous Substances, such as acute toxins, carcinogens, mutagens, and reproductive hazards.
                b. Avoid storing materials in CFHs as they disrupt airflow, creating turbulence and the potential for exposure to airborne hazards.

c. While working inside the CFH, keep the hood sash closed as much as possible while still allowing comfortable working conditions (never more than 18”). Containment of airborne hazards cannot be ensured outside of this range.
d. Do not use a CFH unless it has been inspected within the past twelve months by Risk Management.
e. Risk Management will report a CFH identified as not functioning properly to FMPC. Risk Management will also place an "Out of Service-Do Not Use" sign on the hood. Do not use a CFH posted with an "Out of Service-Do Not Use" sign or is otherwise believed to be not functioning properly.

2. Other Local Exhaust Ventilation
    a. When hazardous chemicals cannot be used in a CFH, local exhaust ventilation may be needed to minimize exposure. Sometimes referred to as a snorkel or elephant trunk, it allows the capture and exhaust of hazardous substances close to the source of use before their release into the lab environment. Although not as effective as a CFH, as CFHs have a high degree of containment, these devices can be effective if properly designed and used. These devices must be professionally designed and installed to ensure their efficacy. Local exhaust ventilation is also inspected by Risk Management annually.
3. The best way to prevent exposure to airborne substances is to prevent their escape into the working atmosphere by using hoods and other ventilation devices. To determine the best choice for lab ventilation using engineering controls for personal protection, RCC will reference Table 9.3 of the 2011 edition of "Prudent Practices." A lab ventilation system should include the following characteristics and practices:
    a. Heating and cooling should be adequate for employees’ comfort and equipment operation. Before modifying any building HVAC, the impact on lab or CFH ventilation should be considered, and how lab ventilation changes may affect the building HVAC.
    b. A negative pressure differential should exist between the amount of air exhausted from the lab and the amount supplied to the lab to prevent uncontrolled chemical vapors from leaving the lab.
    c. Local exhaust ventilation devices should be appropriate to the materials and operations in the lab.
    d. Lab air should not be recirculated but should be exhausted directly outdoors.

4. Ventilation systems are maintained and inspected by FMPC as needed, after any work is performed that impacts the system, and after any power interruptions. There should be no areas where air remains static or areas with unusually high airflow velocities. Lab ventilation must meet the standard of eight air changes per hour and be tested annually by Risk Management and FMPC.
5. Before work begins, lab employees are provided with proper training that includes how to use the ventilation equipment, how to ensure that it is functioning properly, the consequences of improper use, what to do in the event of a system failure, power outage, or alarm, special considerations, and the importance of signage and postings.

c. Administrative Controls
    i. Chemical labeling, training, and lab-specific standard operating procedures are the most common administrative controls in science labs.
    ii. Standard Operating Procedures (SOPs)
        1. Adhering to proper SOPs reduces the chance of occupational exposure to hazardous substances. To ensure a thorough understanding of the procedures, specific SOPs are included in the appendix section of the CHP.

d. Personal Protective Equipment (PPE)
    i. The purpose of PPE is not to reduce the risk associated with working in a lab environment. The purpose of PPE is to mitigate the harm that may result from those risks. It is crucial, therefore, that appropriate PPE is worn at all times. Some activities may require higher levels of PPE to be worn than others. A proper PPE assessment should be conducted for every activity. A minimum level of PPE is required whenever employees are handling chemicals or working in an environment in which chemicals are being handled.
    i. Eye Protection
        1. Appropriate chemical splash protective eyewear must be worn when handling chemicals or working in an environment where chemicals are being handled. This means that the protective eyewear must bear the mark "Z87+D3." This is the only eyewear that affords protection against chemical splashes. Eyewear marked with "Z87" "or "Z87+" is rated for impact protection only. It does not protect against chemical splash hazards and is not appropriate eye protection for employees handling chemicals or working in an environment where chemicals are being handled.
        2. When protective eyewear must be worn, it must always cover the eyes. It must be worn until the employee has exited the zone where chemicals are handled or other hazardous equipment is

used. Employees should be aware that chemicals are not the only lab hazard, and protective eyewear should be worn in the presence of other hazardous materials, such as centrifuges and vacuum equipment.

3. Contact lenses should not be worn when handling chemicals. Protective eyewear must be worn over prescription eyewear (unless the prescription eyewear already meets the protective eyewear standard for the task at hand).

ii. Lab coats/Aprons

1. All employees handling chemicals or working in an environment where chemicals are handled must wear a lab coat or apron. White polyester lab coats are neither flame-retardant nor chemical-resistant. They are intended to provide a barrier between the chemical used and the employee's clothing.
2. To be effective, lab coats and aprons should be laundered regularly. Lab coats and aprons will not be taken home and laundered.
3. When working with/handling certain chemicals (such as flammable materials), a flame-retardant lab coat should be worn. When pyrophoric compounds (any chemical that will spontaneously combust in the air) are used, a flame retardant (blue) lab coat must be worn.
4. Flame retardant lab coats do not protect against open flames, such as from Bunsen burners. Employees must act with appropriate caution when using open flames and ensure that the lab coat is kept away from the open flame. This may necessitate partially rolling up the sleeve of the lab coat.
5. Lab coats and aprons must always be removed before entering office space, restrooms, or any non-lab space and before leaving the building.

iii. Gloves

1. It is recommended that gloves should be worn when handling chemicals. It is important to note that disposable gloves, such as vinyl or nitrile, are not impervious to many chemicals that are hazardous to health. Employees must be aware that wearing gloves does not in itself protect them from chemical contact. When selecting gloves, employees should be aware that heavy-duty gloves, although they may be more chemically resistant, can reduce manual dexterity and increase potential hazards. It is advisable to change disposable gloves regularly and immediately after they have potentially come into contact with a chemical.
2. Gloves must not be worn outside lab areas. Employees should also be aware of the potential for cross-contamination when wearing gloves. Care should be taken to ensure that potentially

contaminated gloves do not come into contact with personal areas such as the face, eyes, or hair. Furthermore, gloves should be removed, and hands should be washed before using computers, phones, calculators, pens, and pencils.

iv. Respirators
    1. Whenever the concentration of airborne contaminants is likely to exceed OR-OSHA PEL or another recommended exposure limit, a CFH is to be used. If this is not possible, the correct type of respirator must be worn. Respirators, including disposable N-95s, will only be worn by employees who are a part of RCC's Respiratory Protection Program and have been medically qualified, trained, and fit tested.

7. Lab Safety Equipment

a. Eye Wash Stations – Labs where hazardous substances are used or stored will be equipped with an eye wash station. The devices are intended to provide a continuous stream of clean, flushing fluid to rinse the eyes in the event of hazardous substance exposure. Campus Security shall perform a weekly test by activating the device for a period long enough to verify operation and ensure that clean flushing fluid is available.

b. Overhead Emergency Shower – Labs where hazardous substances are used or stored shall be equipped with an overhead emergency shower. The devices are intended to provide a continuous stream of clean, flushing fluid to rinse the body in the event of hazardous substance exposure. Campus Security shall perform a weekly test by activating the device for a period long enough to verify operation and ensure that clean flushing fluid is available.

c. Fire Blankets – Some labs have fire blankets. Fire blankets are not required. Campus Security is responsible for maintaining fire blankets.

d. Fire Extinguishers
    i. Fire extinguishers are provided to labs for use if a fire blocks a means of egress, and the lab employee must fight a fire to save their own life or extinguish small fires if able, and if the individual has been trained. Labs should have the appropriate class of extinguishers for the fire hazards in the lab. In general, a class BC or class ABC extinguisher is appropriate. This extinguisher is sometimes supplemented with a Class D fire extinguisher, as required. Risk Management can provide guidance on the selection of the appropriate fire extinguisher, including its placement.

ii. In their initial online training, lab employees are trained in basic fire extinguisher use. Risk Management will provide specific fire extinguisher training as requested.
iii. Fire extinguishers are inspected monthly by Campus Security and annually by a third-party contractor and replaced as needed. Risk Management manages the installation, inspection, maintenance, and replacement of fire extinguishers. Lab employees should report any issues with fire extinguishers to Risk Management.

e. Bloodborne Pathogen Spill Kits – Kits are provided to the Science Department in a limited capacity but will only be utilized by designated Science Department employees enrolled in the RCC Bloodborne Pathogen Protection Program. All other Science Department employees should contact FMPC if a bodily fluid cleanup is required in the Science Department. All kits are inspected monthly by Campus Security.

f. First Aid Kits – Kits appropriate to the activities of the Science Department that meet the standards outlined by ANSI Z308.1-2015 are maintained in each science lab by Risk Management in coordination with the Science Department lab technicians. All kits are inspected monthly by Campus Security.

8. Lab Housekeeping

a. Each lab employee is responsible for maintaining a clean and uncluttered workspace. This will help prevent spillage, breakage, personal injuries, and unnecessary contact with chemicals.

b. Lab employees are responsible for common areas of the lab.

c. Spills must be cleaned up immediately from work areas and floors.

d. All work areas must be kept clean, clear, and free from hazards.

e. All floors, passageways, and ingress/egress points should be clear and unobstructed at all times.

f. Access to emergency equipment and utility controls must not be blocked.

g. Limit the amount of lab waste stored in the lab at any time.

9. Lab Working Practices

a. Some procedures require prior approval before an instructor attempts to perform them. The CHC must approve these procedures before they can be performed. They include but are not limited to:
    i. New or modified lab procedures that use hazardous compounds not already maintained by the department.
    ii. New or modified lab procedures that generate acute hazardous waste.
    iii. Any new or modified lab procedures that involve the use of radioactive materials.

b. Lab employees should not work in the lab alone without their supervisor's approval.

c. Always be aware of your surroundings and other activities in the lab.

d. Confine long hair and loose clothing. Hair that is longer than shoulder length should be tied either up or back to keep it out of the face and away from potential hazards such as open flames.

e. Wear appropriate attire, including closed-toe shoes, at all times in the lab. This means there must be no exposed skin below the waist, and only closed-toe shoes are permitted. Employees should be aware that some synthetic fabrics may react with or dissolve in certain chemicals and that wearing natural fibers is recommended. Employees should also consider that skin-hugging clothes will keep chemicals spilled on them in direct contact with the skin, increasing the risk of adverse effects from chemical spills. More loosely fitting clothing that can be quickly removed in an emergency is recommended.

f. Appropriate PPE, including proper eye protection, must be worn in the lab.

g. Lab employees must be alert to unsafe conditions and must ensure that such conditions are corrected when detected.

h. Clean up any spills on work surfaces immediately to prevent chemical residue accumulation.

i. An appropriate assessment of all hazards must be carried out before any procedure is attempted.

j. Be aware of chemical incompatibilities.

k. All chemicals should be appropriately stored when they are not in use.

l. Secondary containment must be used whenever appropriate.

m. Do not use chipped, cracked, or otherwise damaged glassware. Glassware that is not contaminated with hazardous or infectious materials and that is chipped or scratched presents a serious breakage hazard when heated or handled. Such materials need to be properly discarded into puncture-resistant cardboard boxes provided by Risk Management.

10. Spill Procedures

a. Incidental spills of chemicals in the lab or lab preparation areas must be cleaned up immediately under the supervision of employees trained in spill response, knowledgeable in the hazards involved, and knowledgeable of the precautions to be taken. Incidental spills are characterized by a small volume (less than one liter) of a known substance that does not present a significant health and safety hazard to clean up. RCC employees working with chemicals in lab and lab preparation areas must know the hazards and the physical & chemical properties of the chemicals they handle or work with to safely assess or clean up a spill. The basic steps of incidental spill response are:
    i. Alert people nearby to stay away.
    ii. Assist injured and/or contaminated people.
    iii. For any chemical spills resulting in injuries or property damage, call Campus Security for the corresponding campus.
    iv. Get a spill cleanup kit.
    v. Put on personal protective equipment, including chemical splash goggles and chemical-resistant gloves.
    vi. Contain the spill.
    vii. Clean up the spill.
    viii. Notify the Director of Risk Management to determine how the spill cleanup materials need to be disposed of.

b. For spills of unknown materials, large spills (greater than 1 liter), and spills of any amount containing highly toxic, volatile, or Class 1 flammable (flashpoint of 100 F or less) chemicals or infectious agents, departmental employees should evacuate and not clean up the spill.
    i. Alert people nearby to evacuate the area.
    ii. Assist injured and/or contaminated people.
    iii. Contain the spill to stop it from spreading only if it is safe to do. Close the doors to the area.
    iv. Notify 911 and tell the dispatcher the source or cause of the spill, the contents of the spill, volume, location, and the extent of the evacuation you deem necessary.
    v. Notify Campus Security at your corresponding campus. Campus Security will notify the Director of Risk Management.
    vi. Risk Management will contact spill cleanup contractors, as necessary.

c. Each department must have spill supplies available for the type of spills that could occur. Suggested supplies include:
    i. Personal protective equipment: chemical splash goggles, gloves.
    ii. Spill cleanup signs.
    iii. Absorbent socks, drain blockers.
    iv. Absorbent pads, pillows, loose absorbents, or neutralizers.
    v. Non-sparking scoops and scrapers, mini broom/dustpan.
    vi. 5-gallon bucket, heavy-thickness polyethylene bags.

11. Food and Drink

a. Eating, drinking, tobacco use, and cosmetic application are not permitted in labs.

b. Food for human consumption must not be stored in a refrigerator that has been used or is being used to store chemicals.

c. Ice produced by ice machines for lab use must not be used for beverages, food, or food storage.

d. No equipment used for lab operations should be used to store, handle, or consume food or beverages.

e. Wash hands before using the restroom, eating, smoking, or applying cosmetics. Wash areas of exposed skin, e.g., forearms, frequently if there is potential for contact with chemicals.

12. Preventing Chemical Exposures

a. Most chemicals used in RCC labs, when used in limited quantities, do not pose a significant health hazard if SOPs and good lab hygiene practices are employed. Lab employees must not be exposed to OSHA-regulated substances above PEL. An exposure assessment performed by Risk Management is designed to evaluate the chemical(s) used in terms of its concentration and quantity, frequency of use, and the way it is used, along with the available engineering controls, in an effort to determine the potential exposure to a user. Recommendations will accompany an exposure assessment on methods to reduce exposure where exposure may exist and will typically follow the hierarchy of controls. Exposure assessment is a vital component of the CHP that protects college employees from potential exposure to hazardous substances.

a. Strategies to Reduce Chemical Exposure:
    i. Avoid skin contact with hazardous chemicals.
    ii. Be aware of the scope for cross-contamination.
    iii. Do not sit on workbenches.

iv. Care should be taken with items you place close to your person (e.g., cell phones). Using such items with gloved hands or placing them on workbenches leads to chemical cross-contamination.
v. Remove gloves before leaving the lab or using items such as cell phones, computers, calculators, etc.
vi. The use of lab notebooks in areas where chemical cross-contamination is likely is discouraged. Best practice is to restrict notebook use to office space only.
vii. Do not taste or ingest chemicals.
viii. Use a vacuum or pipette bulb. Do not pipette by mouth.
ix. Use engineering controls (e.g., fume hoods and centrifuge rotor hoods) appropriately to minimize chemical exposure.
x. Plan operations, equipment, and protective measures based on knowledge of the chemicals in use.
xi. Lab employees must know the location of lab safety/emergency equipment (first aid kit, fire extinguisher, chemical spill kit, eyewash, safety shower, etc.).
xii. All lab incidents must be reported through the online RCC Accident Reporting system. Lab employees should report unsafe lab practices or conditions to their supervisor, the CHO, and the Director of Risk Management.
xiii. Follow the SOP for any equipment and process used.
xiv. Always wash your hands before leaving the lab.

b. Exposure Assessment Strategy
    i. Risk Management utilizes various sources to develop its exposure assessment strategy, including lab chemical inventories, lab safety surveys, chemical purchase records, and chemical waste identification. Exposure assessments are carefully planned and coordinated with lab employees to ensure that work activities representative of the exposure potential are performed during the assessment. Lab hygiene practices will be reviewed and may be qualified and quantified with surface wipe sampling and analysis. Personal and area air sampling/monitoring studies may be used to quantify the airborne concentration of a hazardous substance since inhalation is typically the primary route of concern for exposure to hazardous chemicals. The assessment results will be reviewed and evaluated compared to accepted Occupational Exposure Limits (OELs).

c. Frequency of Exposure Measurements
    i. An initial exposure assessment may include personal air sampling, with samples collected in the employee's breathing zone to represent an employee's exposure during a full shift [e.g., 8-hour time-weighted average (TWA)] and/or 15-minute Short-Term Exposure Limit (STEL). Risk

Management will consult with lab employees to determine which groups of employees have potential exposure to establish similar exposure groups (SEGs) so representative exposure samples can be collected. Depending on the exposure assessment results, monitoring may need to be repeated as required by OSHA or determined by Risk Management. An exposure assessment may also be repeated if the lab makes a substantive change (i.e., change in chemicals, equipment, or control measures) to the process under which a prior exposure assessment was performed. If substantive changes occur, lab employees must contact Risk Management for a re-evaluation. Additionally, an exposure assessment may be repeated at an employee's request or when an employee reports signs or symptoms of exposure. Risk Management will advise the lab when exposure monitoring can be discontinued.

d. Notification of Exposure Measurement Results
    i. Risk Management will provide a report of the exposure assessment within 15 days of receiving the exposure assessment results. If the results are below the accepted OELs, the CHO will be notified and asked to post the results in the lab and inform the affected employee(s) of the results. If the results are above the accepted OEL, the affected employee(s) and the CHO will be notified and asked to meet with Risk Management to discuss the results and the next steps, which may include enrollment in a medical surveillance program.

e. Medical Surveillance
    i. RCC has established a medical surveillance program to address certain workplace hazards, including occupational exposure to biological, chemical, and physical hazards. Medical surveillance is intended to provide medical consultation in case of exposure to a hazardous substance(s) above an accepted OEL, or an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the lab. All required medical examinations and consultations shall be provided to lab employees at no cost, without loss of pay, and at a reasonable time and place. When a lab employee is exposed to an OSHA-regulated substance, the lab employee shall be required to obtain medical consultation and examination under the following conditions:
        1. An employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the lab.
        2. An exposure assessment reveals exposure above the OSHA Action Level (AL), Permissible Exposure Limit (PEL), or Short-term Exposure Limit (STEL).

3. An event occurs in the work area, such as a spill, leak, explosion, or other occurrence resulting in the likelihood of exposure above OSHA-defined limits.
4. Working with certain biological, chemical, and physical agents, including employees who work with patients, lab animals, bloodborne pathogens, other potentially infectious materials, certain chemicals, or whose work requires the use of a respirator.

13. Service and Non-Service Animals in the Lab

a. Due to the potential risks of the lab environment for students, employees, and animals, students with service animals are required to work with the Access and Disability Resources office. Once notified, the RCC Science Department will provide a designated mat and area for service animals to attend class or labs safely.

b. Non-service animals are not permitted in the lab.

14. Training

a. Working in a science lab presents many hazards to the individuals conducting the work and others in the same space. Common categories of hazards include chemical, biological, and radiological.

b. RCC shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area.

c. Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and before assignments involving new exposure situations. Refresher information and training are required periodically. The training outlined below will be administered and tracked by Risk Management.
    i. Employee training will include:
        1. The contents of this plan and all applicable standards and appendices shall be made available to employees.
        2. The location and availability of the RCC Chemical Hygiene Plan.
        3. The PEL for OSHA-regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard.
        4. Signs and symptoms associated with exposures to hazardous chemicals used in the lab.
        5. The location and availability of known reference material on the hazards, safe handling, storage, and disposal of hazardous

chemicals found in the lab, including, but not limited to, Safety Data Sheets received from the chemical supplier.

6. Methods and observations that may be used to detect the presence or release of a hazardous chemical (such as monitoring conducted by RCC, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.).
7. The physical and health hazards of chemicals in the work area.
8. The measures employees can take to protect themselves from these hazards include specific procedures RCC has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used.

d. Risk Management will administer and track the following training for all Science Department employees before they start work and every three years or earlier as required after that:
   i. Bloodborne Pathogens
   ii. Laboratory Safety
   iii. Safety Showers and Eye Wash Stations
   iv. Personal Protective Equipment: Hand Protection
   v. Personal Protective Equipment: Eye and Face Protection
   vi. Fire Extinguisher

15. Chemical Procurement

a. The CHC must review all purchases of new lab chemicals before purchase. This is done by submitting the SDS to the CHO and the Director of Risk Management. Employees or students are not to bring chemicals or equipment into the lab from an outside source (outside of the RCC purchasing process) without the permission of the Director of Risk Management and the CHO.

b. Purchase chemicals in the smallest quantity sufficient for your work. While it is often possible to save money by purchasing materials in bulk, these quantities are usually much more than are necessary for most RCC labs. When these chemicals are stored with no foreseeable use or to the point that they become degraded, they are considered inherently waste-like and must be disposed of as hazardous waste.

c. Anyone involved in procuring a chemical or other specimen should be aware of proper handling and storage requirements before the chemical or specimen is received, including RCC employees working in Shipping and Receiving.

d. Only containers with adequate identifying labels should be accepted.

e. All chemicals will be routed through RCC Shipping and Receiving. All chemicals that must be transported between campuses should be done in all original packaging.

f. Shipments with breakage or leakage will be refused or opened in a chemical hood.

g. Using non-hazardous or less hazardous material in place of the original material for a process requires some thought and research by the user. In doing this, the user reduces waste and the risk of potential exposure to those in the immediate area. Process substitutions can also be utilized to reduce hazards. These substitutions may include using improved engineering controls to reduce waste and the risk of potential exposure.

16. Chemical Donations

a. Businesses, schools, or other organizations occasionally offer to donate chemicals (e.g., paints, lab chemicals) to the college. These offers are usually made to and accepted by individual faculty or employees. There is immediate use for the product in some instances, but in many cases, the chemicals are taken in anticipation of future use on campus. Accepting donated chemicals has resulted in chemical management compliance issues (e.g., labeling, storage, availability of SDS, and regulatory reporting). The chemicals have eventually been disposed of as waste at significant cost to the college in many cases.

b. To evaluate the proposed use of donated chemicals on campus and ensure proper management of donated chemicals, all donations must be approved by CHO and the Director of Risk Management before the donation can be accepted. This also includes paints or other chemical products available for pickup at municipal recycling centers. If you have been offered chemicals that you would like to accept, please email the Director of Risk Management and the CHO with the following information. The Director of Risk Management and the CHO will evaluate your request and contact you to discuss the donation.
    i. Donor's name, organization, and phone number.
    ii. Product name(s), number of containers, and size.
    iii. Product expiration date, if any.
    iv. The reason the organization is donating the chemical.
    v. When you would like to receive the materials.
    vi. Proposed use of the material and timeframe for usage.
    vii. The proposed storage location.
    viii. Description of waste generated as the result of their use.

c. Only unopened chemicals will be considered for donation. It is impossible for RCC to determine the exact content of any opened chemical container.

17. Chemical Inventory

a. Each lab (RVC and RWC) shall compile and maintain a chemical inventory, utilizing the Campus Optics software, of all chemicals normally used or stored in the lab. The list shall include relevant information about each chemical, including where it is normally used and stored. This inventory will be updated regularly.

18. Chemical Substitutions

a. One of the most effective ways to reduce the risk of exposure to hazardous material is to eliminate it from the work environment. This can be accomplished by replacing hazardous materials with safer, less hazardous ones capable of performing the same function. The CHO can assist lab employees in evaluating work practices to identify candidates for substitution.

19. Safety Data Sheets

a. Chemical manufacturers are required to evaluate the hazards of chemicals they produce or import and to provide this information to purchasers at the time of shipment through SDSs under OSHA's Globally Harmonized System of Classification and Labelling of Chemicals (GHS) standard. All hazardous chemicals manufactured in or imported to the United States of America will have accompanying SDSs in a standardized 16-section format. SDSs provide valuable information about a chemical's constituents, emergency aid/response measures, hazards, and exposure control/protective equipment, among other information. Lab employees are required to have immediate access to SDSs to aid them in evaluating the potential hazards of a substance before its use and in the event of an emergency. SDS access and management are available to all RCC Science Department employees via the Campus Optics online chemical inventory system.

20. Chemical Labels

a. When chemicals are received by the ordering department, verifying and maintaining clear and legible labels is the responsibility of Science Department employees working in Central Supply. It is RCC's policy that, at a minimum, all chemical containers will be:
    i. Labeled clearly and legibly in English. The label will identify the contained chemical and its hazards using recognized signs/symbols for hazards.
    ii. All chemicals received after December 31, 2015, shall have GHS-compliant labeling, including a product identifier, a signal word, a hazard

statement, a precautionary statement, a pictogram, and the supplier's name, address, and telephone number.

iii. All chemical containers, when received, will be marked with the date received.

iv. All unstable chemicals, such as anhydrous ether, will be marked with the date they were opened.

v. 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 possible, the manufacturer's labels will NOT be covered over, defaced, or removed. Lab operations may require transferring chemicals from the original labeled container to a secondary container (e.g., beaker, flask, or bottle) for lab use. Under this circumstance, no secondary label is required by OSHA. However, it is important that the lab employees not lose information about the chemicals for proper disposal and any spill response.

21. Chemical Storage

a. Proper storage of chemicals in labs is a critical safety concern. Chemicals that have been stored improperly could react, forming hazardous products or resulting in a fire. Follow good storage practices no matter where the chemicals are stored (i.e., cabinets, refrigerators, or shelves). Carefully read the SDS and container label before storing a chemical, as these will indicate any special storage requirements, as well as incompatibilities.

b. Good Storage Practices
   i. Chemicals shall be segregated in accordance with good practice and Flinn Scientific Chemical Storage and Campus Optics recommendations.
   ii. Chemicals should be stored in approved, compatible containers.
   iii. Chemicals should be stored below eye level, with heavy objects on lower shelves.
   iv. Corrosives should not be stored on bare metal shelves. Instead, use plastic storage bins or shelves, cover metal surfaces with protective, plastic-backed paper (Bench-Kote), and change frequently.
   v. When practical, chemicals in the same hazard class should be stored in corrosion-resistant secondary containers.
   vi. Chemicals should not be stored in the fume hoods but on proper shelves or specially designed cabinets for flammables or corrosives.
   vii. Lab employees must inspect chemical storage areas at least annually for deterioration of contents and containers. Report on the completion of the inspection to the CHO and the Director of Risk Management.

22. Waste Disposal

a. The number of unwanted chemicals in the lab should be kept to a minimum by regular waste collection. RCC Risk Management manages the disposal of all hazardous, universal, and infectious waste. While the Science Department utilizes the disposal guidance provided by Flinn Scientific, it is understood that the information provided by Flinn Scientific is guidance, and the requirements in the State of Oregon dictate waste disposal procedures.

b. All chemicals no longer useful (expired, contaminated, no longer needed, etc.) must be submitted to Risk Management for disposal with the department's hazardous waste, regardless of hazard classification.

c. Treatment (pH neutralization) or drain disposal of lab waste is prohibited without Risk Management authorization, including but not limited to cases where neutralization is part of the instructional process and not a separate step taken afterward.

d. Risk Management will perform a hazardous waste assessment for any unknown chemicals, including sampling and review by a third-party lab.

e. Additional information regarding waste disposal can be found in the RCC Universal and Hazardous Waste Program and the RCC Infectious Waste Program.

23. Record Keeping

a. Employee medical records (Maintained for the duration of employment plus 30 years)
    i. Employee medical record means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care employees or technician, including:
        1. Medical and employment questionnaires or histories (including job description and occupational exposures),
        2. The results of medical examinations (pre-employment, pre-assignment, periodic, or episodic) and lab tests (including chest and other X-ray examinations taken for the purposes of establishing a baseline or detecting occupational illness, and all biological monitoring not defined as an “employee exposure record”),
        3. Medical opinions, diagnoses, progress notes, and recommendations,
        4. First aid records,
        5. Descriptions of treatments and prescriptions,
        6. Employee medical complaints,
        7. "Employee medical record" does not include medical information in the form of:

a. Physical specimens (e.g., blood or urine samples) which are routinely discarded as a part of normal medical practice; or
b. Records concerning health insurance claims, if maintained separately from the employer's medical program and its records and not accessible to the employer by employee name or other direct personal identifier (e.g., social security number, payroll number, etc.); or
c. Records created solely in preparation for litigation which are privileged from discovery under the applicable rules of procedure or evidence.

b. Employee exposure records (Maintained for 30 years)
    i. An employee exposure record means a record containing any of the following kinds of information:
        1. Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other forms of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.
        2. Biological monitoring results that directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not include results that assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs;
        3. Safety data sheets indicating that the material may pose a hazard to human health; or
        4. In the absence of the above, a chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance or harmful physical agent.

c. SDS and chemical inventories are maintained by the Science Department and Risk Management in Campus Optics and are accessible by all Science Department employees and by Risk Management. Each lab may also have at their discretion a backup system for paper copies of all chemical SDSs or a USB drive of that location's inventory. The SDS program or dated inventory must be maintained for 30 years.

d. Risk Management will maintain records of air monitoring results or exposure assessments. Employees will have access to the air monitoring results as outlined in this plan. These records must be maintained for at least 30 years.

e. If needed, radiation exposure monitoring results will be kept by Risk Management. These records must be maintained for at least 30 years. Each individual affected will be provided a copy of the results as required.

f. The health care provider will maintain medical consultation and examination results. 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 30 years plus employment time.

g. Risk Management and Human Resources maintain workplace injury and illness records. These records must be maintained for at least five years.

h. Risk Management and Facilities Management, Planning, and Construction will maintain ventilation system certification and maintenance activities.

i. Risk Management will maintain fume hood certifications for five years.

j. Training Records will be maintained by the Director of Risk Management based on the type of training that is being documented.

k. Risk Management will maintain hazardous waste and other environmental records for the years required by the different regulations.

l. Review and revision of the CHP data will be maintained by Risk Management. At least three years of review and revision records are maintained. The CHO will maintain Lab and Central Supply Inspection Checklists for three years.