



**FRONT RANGE
COMMUNITY COLLEGE**

CHEMICAL HYGIENE PLAN

May 11, 2017

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Chemical Hygiene Plan Summary

The Front Range Community College (FRCC) [Chemical Hygiene Plan](#) is considered a general guide that provides the FRCC community with information to protect the health and safety of its staff, faculty, visitors and students when working with or around hazardous chemicals.

The plan is not a “how to” document for those who work with chemicals; it is meant to serve as a guide to help workers be better prepared and aware of what it takes to be safe when handling and working with chemicals, and to know what to do and whom to call in case of chemical spills.

The plan includes a set of definitions and rules, procedures and responsibilities for each person that has a role in ensuring the plan is put into action. In addition, the plan includes a set of control measures to be considered when working with or around hazardous chemicals. It provides an understanding of the safety data sheets (SDS) and their benefits. Furthermore, the plan provides guidance on whom to call and what to do in case of a hazardous waste spill and disposal. Lastly, the plan sets the stage for training for FRCC employees and students who work with and around chemicals.

This plan is shared with the FRCC community and available on the FRCC website to ensure everyone has access to the plan and is able to refer to it as needed.

For questions or concerns regarding the plan in general or any parts of the plan please email the Chemical Hygiene Committee at CHC@frontrange.edu.

Chemical Hygiene Plan

I. Purpose

- A. The purpose of this chemical hygiene plan for Front Range Community College (FRCC) is to:
 1. Protect faculty, staff, visitors, outside contractors and students from health hazards associated with the use of hazardous chemicals at FRCC;
 2. Assure that faculty, staff and students are not exposed to substances in excess of the permissible exposure limits (PEL's) as defined by the Occupational Safety and Health Administration (OSHA) and outlined in 29 CFR 1910.1000, Table Z-1.
- B. This plan is available on the FRCC website at <http://www.frontrange.edu/being-a-student/campus-safety/college-chemical-hygiene-plan>, or by clicking [here](#), and a copy is located with each campus Vice President.
- C. This plan will be reviewed and updated as necessary by the Chemical Hygiene Committee.
- D. The plan is approved by the FRCC Cabinet on September 28, 2015.

II. Definitions

Chemical Hygiene Committee

The Chemical Hygiene Committee is responsible for setting campus policy regarding safety within the scope of this Chemical Hygiene Plan. The Chemical Hygiene Committee meets periodically, as set by the Committee chair, but no less than quarterly to discuss new safety and chemical hygiene issues and any program items that may arise. The Chemical Hygiene Committee will offer comments to the Chemical Hygiene Officer (CHO) regarding program improvements and suggestions and participate in safety inspections with other campus representatives. Please see Appendix C for the structure, role and responsibility of the Chemical Hygiene Committee.

Hazardous Chemical

A chemical is considered to be hazardous if it is determined to be cancer-causing, toxic, corrosive, an irritant, a strong sensitizer, flammable, or reactive, and thereby poses a threat to health and the environment.

Laboratory

Laboratory means a facility where the "use of hazardous chemicals" occurs. It is an area where relatively small quantities of hazardous chemicals are used on a non-production basis.

PEL – Permissible Exposure Limit

The Permissible Exposure Limit (PEL) is a legal limit in the United States for exposure of an employee to a substance or physical agent. For substances it is usually expressed in parts per million (ppm), or sometimes in milligrams per cubic meter (mg/m³). Permissible Exposure Limits are established by the Occupational Safety and Health Administration (OSHA). A PEL may be expressed as a time-weighted average.

PHS – Particularly Hazardous Substances

PHSs are, according to OSHA, select carcinogens, reproductive toxins, or substances that have a high degree of acute toxicity. The OSHA requirements for working with PHSs are more a matter of degree than a clear-cut differentiation from other substances. Risk assessments must always be conducted. The Laboratory Standard simply requires that higher risk materials be identified, and mandates that extra precautions be used, if appropriate. More detail on PHSs is included in Appendix E, along with a sample "Prior Approval Form."

SDS - Safety Data Sheet (previously MSDS - Materials Safety Data Sheets)

A Safety Data Sheet (SDS) is a document containing data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures.

TLV – Threshold Limit Value

The Threshold Limit Value (TLV) of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. Strictly speaking, TLV is a reserved term of the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs are published annually by the ACGIH.

There may be some substances that do not have an exposure limit specified in the OSHA standards. For those substances, exposure limits shall comply with the recommendations of the ACGIH. Although TLV levels are often recommended, OSHA will sometimes use TLV values to set the PEL. Employees should strive for exposure limits of the lesser of the TLV or PEL.

TWA – Time Weighted Average

A TWA is the average exposure over a specified period of time, usually a nominal eight hours. This means that, for limited periods a worker may be exposed to concentrations higher than the PEL, as long as the average concentration remains lower over an eight hour period.

III. Basic Rules, Procedures, and Responsibilities

There are a specific set of standard operating procedures (Appendix A) and defined roles and responsibilities for those who interact with chemicals:

- A. Roles and responsibilities for all FRCC employees, students, contractors and visitors are available in Appendix C.
- B. Each affected department chair or supervisor will designate a **Chemical Hygiene Representative** who has primary departmental responsibility for the implementation and maintenance of this plan in his or her department. The department representative will ensure any concerns or recommendations are submitted to the Chemical Hygiene Office when identified.
- C. Students must be made aware of chemical health and safety hazards in classroom situations and be provided with information and equipment to protect themselves from those hazards. Instructors will provide department approved student general safety training at the beginning of each course in which hazardous chemicals are used. Specific safety instructions should be provided at the beginning of each class period when hazards are present.

IV. Control Measures to Reduce Exposures to Hazardous Chemicals

If it is impossible to eliminate the hazard, exposure to hazardous materials should be minimized to the greatest extent feasible by use of other controls. These controls include the following:

1. Operations, Procedures or Activities Requiring Prior Approval
2. Employee and Student Training on how to reduce exposure
3. Full Time and Part Time Instructor Supervision
4. Restricting Access and Signage
5. Adequate Ventilation
6. Use of Personal Protection Equipment (PPE)
7. Labels on Hazardous Materials
8. Appropriate Procurement, Storage, Transport and Handling
9. Additional Safety Equipment

1. Operations, Procedures or Activities Requiring Prior Approval

FRCC requires that each affected faculty or staff member reviews all operations involving use of particularly hazardous substances or chemicals (PHS). Whenever possible, the hazard should be eliminated or substitution of a hazardous chemical or procedure with a substance or process with lower inherent risk should be undertaken. Additionally, control measures commensurate with the risk must be implemented. Control measures include

engineering controls (such as fume hoods, glove boxes, etc.), administrative controls (such as policies against working alone), and personal protective equipment (gloves, eye protection, respirators, etc.).

Prior approval will be obtained from the Department Chair or Supervisor in consultation with the Chemical Hygiene Committee for activities which present specific foreseeable hazards to employees and students. The Department Chair or Supervisor will notify Campus Security and Preparedness prior to these activities.

- a. Unattended Operations that have the potential to cause spills, emissions, or exposures need prior approval. Protocol found in Appendix E shall be followed.
- b. When employees are working alone, arrangements shall be made to cross check their activities. Any activities known to be particularly hazardous shall never be undertaken by a worker alone.
- c. The responsibility for approval of the acquisition and use of PHS's rests with department Chair or Supervisor and will include the amounts, possibilities for exposure and duration of use for the PHS. Consultation with the Chemical Hygiene Officer regarding procedures to address all precautions as outlined the plan is necessary before permission is granted. Protocol found in Appendix E shall be followed.

PHS approval is required for the following:

Physical Hazards:

- Explosives
- Flammable Gases when uncontrolled-release is a risk
- Flammable Aerosol when uncontrolled-release is a risk
- Gases Under Pressure -- gases under pressure is a particularly hazardous substance when not in an approved commercial container
- Self-Reactive Substances
- Pyrophoric Liquids
- Pyrophoric Solids
- Self-Heating Substances
- Substances which, in contact with water emit flammable gases under Category 1
- Organic Peroxides

Health and Environmental Hazards:

- Acute Toxicity – Category 1 and Category 2
- Target Organ Systemic Toxicity - Single Exposure – TOST Category 1

Environmental Hazard

- Hazardous to the Aquatic Environment

2. Employee and Student Training

- a. Any person who works in or around hazardous materials must receive training to become knowledgeable about potential hazards in their work environment. FRCC employees and their supervisors who handle hazardous materials must attend a general session on the Chemical Hygiene Plan. Training sessions will be documented and kept on file by Human Resources. Employees must have completed Chemical Hygiene Plan training prior to attending specific training from their department.
- b. Every affected employee must be informed by the responsible department of any special hazards to which they might be exposed while working at FRCC. Anyone performing routine cleaning must be informed by the department of any unusual hazards.
- c. Employees shall receive additional, more specific training from their department chair or supervisor as needed. See Appendix C, Department Chair or Supervisor.
- d. Students will receive training from their instructor. See Appendix C, Full Time and Part Time Instructor

3. Instructor Supervision – See Appendix C – Full Time and Part Time Instructors' Responsibilities

4. Restricting Access and Signage

- a. Any area marked with one of the following placards similar warning signs are to be regarded as restricted access areas:

- CAUTION - BIOHAZARD
- CAUTION - CARCINOGENS, REPRODUCTIVE TOXINS, OR OTHER EXTREMELY TOXIC CHEMICALS
- CAUTION - RADIOACTIVE MATERIAL
- CAUTION - RADIATION AREA
- CAUTION - X-RAY
- CAUTION - LASER

Such areas are not to be entered except by authorized users of the facility and those having permission from authorized users. Custodians are not permitted to enter areas where chemicals are housed to perform routine tasks.

- b. The Chemical Hygiene Committee will determine appropriate signage that will be placed on doors/entryways, in work areas, and in chemical storage areas. Signage may include:
- i. Emergency Response Procedures
 - ii. Emergency Phone Number (911)
 - iii. Name and phone number of person(s) responsible for the work or storage area
 - iv. Notification of any particular potential hazards such as oxidizer, flammable, ionizing radiation, etc.

5. Adequate Ventilation

- a. Adequate ventilation is essential for maintaining safe levels of exposure. It is the responsibility of the instructor or supervisor to discontinue operations if ventilation is judged to be inadequate for any reason, such as equipment breakdown, unusual odors, or accidental spillage.
- b. Fume hoods will be used for all operations which have the potential to produce gases, vapors or fumes exceeding the PEL or TLV as defined in Section II. Fume hoods shall not be used as permanent chemical storage areas. Storing materials in fume hoods reduces their efficiency, and could lead to inadvertent mixing of incompatible chemicals. Fume hoods will be inspected at a minimum of once a year by maintenance personnel. Copies of fume hood inspections will be kept on file as a part of the preventive maintenance database in campus Facilities Department. Filters will be replaced quarterly or according to manufacturer recommendations and appropriately disposed. Warnings will be posted and repairs made as needed and as soon as possible.
- c. Air quality monitoring will be performed if faculty or the supervisor reports a condition which might lead to excessive exposure levels. Campus Security & Preparedness will coordinate monitoring with the campus Facilities Department. The results of monitoring will be kept by Campus Security & Preparedness and Human Resources for the duration of affected employee's employment. The Chemical Hygiene Officer will communicate air quality testing results to the Department Chair or supervisor within 15 days of receipt of the results. The Department Chair or supervisor will communicate with department personnel as appropriate.

6. Use of Personal Protection Equipment (PPE)

- a. PPE involves the use of protective clothing or equipment to protect various parts of the body. Selecting the appropriate and/or required PPE must be done by consulting the SDS.
- i. Eye and face injuries are prevented by the use of the following:
 - Safety glasses with side shields for dust and flying object hazards
 - Splash-proof goggles for chemical splash, spray and mist hazards
 - Face and neck shields for head and neck protection from various hazards
 - ii. Splash-proof goggles provide superior protection against dust, flying objects, and splash, spray and mist hazards. They should be the first choice for primary eye protection.
 - iii. Cover all unprotected skin surfaces. Do not wear open-toe shoes, sandals, shorts, etc. in a chemical laboratory, class or studio.
 - iv. When there is a chance of skin contact with a substance which has a hazard of acute dermal toxicity, skin corrosion, irritation, sensitization, mutagenicity, carcinogenicity, or reproductive toxicity, or which exhibits target organ systemic toxicity which might result from skin exposure, then impervious protective equipment must be utilized as appropriate to prevent skin contamination. Examples include:
 - Protective gloves (See Appendix D)
 - Rubber boots

- Rubberized suits
 - Special protective equipment
- v. Protective garments are not equally effective for every hazardous chemical. Some chemicals will "break-through" the garment in a very short time; therefore, garment selection is based on the specific chemical utilized.

For further questions or reference, please visit the [Colorado Department of Public Health and Environment](#). Other websites include [Colorado Hazardous Waste Regulations 6 CCR 1007-3](#).

- b. Respirators will be worn when engineering controls cannot keep exposure to chemicals below PELs. Employees may not wear a respirator until they have completed required elements of the FRCC Respiratory Protection Program. The campus Facilities Departments have oversight for this program and can be contacted for additional information.

7. Labels on Hazardous Material

- a. Vendors have the primary responsibility in labeling containers of hazardous chemicals. Labels on incoming containers of hazardous chemicals should not be removed or defaced. However, FRCC is responsible for labeling secondary containers. To maintain a basic level of safety, FRCC requires that all chemicals in hazardous material areas be clearly labeled. This even applies to commonplace materials (e.g., water) when they are used in hazardous materials areas.
- i. Labels should be checked regularly to assure they have not become defaced with use. Non-reactive protective tape can be applied over the label to help protect it when necessary.
 - ii. If "unknowns" are used in the laboratory for educational purposes, they must be labeled with an identifier that can be cross referenced with proper names of the chemical or substance.
- b. Waste containers shall have the contents, accumulation start date, and generators' name and department listed on its label in addition to the words "Hazardous Waste." Additional information which will aid in proper waste disposal should also be included on the label if known such as "Hazardous Waste – acid" or "Hazardous Waste – solvent."

8. Appropriate Procurement, Storage, Transport and Handling

- a. Before a hazardous chemical is purchased, information on proper handling, storage, transport and disposal should be known to those who will be involved in its use. If proper handling, storage and transport cannot be assured, then the chemical should not be procured. Donations of hazardous chemicals shall not be accepted without written approval by the CHC.
- b. Appropriate PPE will be used in handling the chemical. See IV. 3.
- c. No container should be accepted without an adequate identifying label. The package should also be inspected for leaks or damage.
- d. Receiving shall be made aware of incoming hazardous chemicals from the procurer. Receiving should notify the procurer when a chemical is received for prompt pick up or delivery of packages.
- e. The SDS file should be checked to see if there is a current document on file. If there is not an SDS, then the most up-to-date version of the SDS shall be obtained from the manufacturer/distributor. See V. on page 5.
- f. Stockrooms and storerooms will be organized so that hazardous substances are segregated by families and stored in secondary containers where appropriate. Appropriate labeling will be used in storing the chemical. See IV. 4. Storage should be in a separate ventilated storage area. Exposure to heat and sunlight should be avoided. Storage on bench tops and in hoods is not advised.
- g. Stored chemicals should be examined periodically (at least annually) for replacement, deterioration, and container integrity.
- h. Secondary container labeling should follow OSHA guidelines.
<https://www.osha.gov/Publications/laboratory/OSHAquickfacts-lab-safety-labeling-chemical-transfer.pdf>
- i. Amounts of stored chemicals should be as small as practical. Periodic inventories (See laboratory coordinator/supervisor/chair responsibilities, Appendix C) should be conducted with unneeded items being disposed of appropriately. See VII, Hazardous Waste Disposal and Hazardous Spills.
- j. When chemicals are hand carried on FRCC campuses, individuals are required to follow the "Transporting Chemicals and other Hazardous Items Safely on the FRCC Campuses" See Appendix F.
- k. FRCC hazardous chemicals shall not be transported by personal or FRCC vehicle off campus at any time.

9. Additional Safety Equipment

- a. The Campus Security and Preparedness office at each campus coordinates the annual fire extinguisher inspections. All faculty and staff are required to maintain a clear pathway for access and visibility to the fire extinguishers.
- b. Eye Wash Stations - Eye wash stations and emergency showers shall be available in areas where the eyes or body of a person may be exposed to injurious hazardous materials or corrosive chemicals or as required by the SDS. Eye wash stations and emergency showers shall be in an accessible location within the work space and shall be identified with highly visible signage. Eye wash stations and emergency showers shall be flushed monthly according to manufacturer recommendations by designated department personnel who will also be responsible for documenting the inspection. See chair / supervisor responsibilities in Appendix C. Employees will be instructed on the location and proper use of eye wash stations and emergency showers.
- c. Fire blankets will only be made available in labs at the request of the instructor, and the instructor will be trained in the proper use of the fire blanket. Fire blankets should only be used by the instructor to smother the flames and should not be used to wrap the victim. If an emergency shower is available, the shower should be used first in an attempt to extinguish the fire.

V. Safety Data Sheets (SDS's)

Safety Data Sheets are available on the [FRCC Chemical Hygiene Plan website](#). In the event that computer systems are not functioning, Safety Data Sheets can be obtained by calling Campus Security or by using other appropriate technology.

VI. Medical Program

- A. Departments must provide all employees who work with hazardous chemicals an opportunity to receive medical attention, including any follow-up examinations which the examining physician determines to be necessary, under the following circumstances:
 1. Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee was exposed at FRCC, the employee must be provided an opportunity to receive a medical examination and, if necessary, medical treatment. The spill and/or exposure will be reported to Campus Security and Preparedness. Campus Security will contact the campus Human Resources department as soon as practical. Campus Security and Preparedness may call 911 for a medical response if needed and after contacting HR, must also direct the employee to select and see one of the authorized Workers' Compensation medical providers. Ambulatory employees that have been exposed should not make direct contact with anyone until after a medical clearance is given.
 2. If the incident investigation claims personnel or treating provider indicates that exposure monitoring or medical surveillance is necessary, the CHO must be notified. Exposure monitoring and medical surveillance shall be established for the affected employee as prescribed by the particular standard.
 3. Whenever an event takes place in the work area such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee(s) shall be provided an opportunity for a medical examination.
- B. The Human Resource Coordinator shall provide the examining physician with the following information:
 - a. Identity of the hazardous chemical to which the employee may have been exposed;
 - b. A description of the conditions of exposure including exposure date if available;
 - c. A description of the signs and symptoms of exposure, if any, that the employee is experiencing; and,
 - d. A copy of the relevant SDS.
- C. The Human Resource Coordinator shall request a written opinion from the physician including:
 - a. Recommendations for future medical follow-up.
 - b. Results of examination and associated tests.
 - c. Any medical condition revealed which may place the employee at increased risk as the result of chemical exposure.
 - d. A statement that the employee has been informed by the physician of the results of the examination or consultation and told of any medical conditions that may require additional examination or treatment.

- e. The material returned by the physician shall not include specific findings and/or diagnoses which are unrelated to occupational exposure.
- D. The Chemical Hygiene Officer has the responsibility to work with Human Resources concerning any events and resultant medical examinations or consultations.

VII. Hazardous Waste Disposal and Spills

- A. All spills and waste generated on campus must be managed in accordance with policies found in the [FRCC Hazardous Waste Management Procedures](#).
- B. To limit spill danger, use the following guidelines:
 - 1. Always purchase, store and dispense chemicals from the smallest bottles possible.
 - 2. Purchase chemicals in plastic bottles or PVC coated glass bottles whenever possible.
 - 3. Transport chemicals using secondary containment.
 - 4. Replace caps/lids on chemicals when not in immediate use.
- C. Storage of hazardous waste should follow the same guidelines as storage of the most hazardous chemical components.
- D. Labeling of hazardous waste shall follow the guidelines in IV. 7b.
- E. When hazardous waste is transported on FRCC campuses, individuals are required to follow the transport guidelines in Appendix F.
- F. Appropriate disposal of hazardous waste must be done through coordination with facilities management so that Conditionally Exempt Small Quantity Generator guidelines are followed. Individuals are required to follow the Colorado Department of Public Health & Environment [Hazardous Waste Transporters Guidance Document](#).
- G. Hazardous Waste Manifests must be signed by the company accepting the waste and not by FRCC personnel.

VIII. Contractor Information

Contractors are to be provided information by FRCC as to hazards specific to each of their work areas. The campus Facilities Department will inform the Department Chair or supervisor of any contractor work scheduled in their area. The Department Chair or supervisor will inform the CHO when such work is to be performed. The CHO or designee will then arrange for temporary removal of the hazardous items or work with the campus Facilities Department to schedule the necessary site-specific training or information as necessary to the contractor.

Appendix A (Part 1) – Standard Operating Procedures for all FRCC Employees and Work Study Students Who Work with Hazardous Chemicals

Safety is a high priority at Front Range Community College.

In addition to *Control Measures to Reduce Exposures to Hazardous Chemicals* (Section IV), the following procedures should be followed by all employees and students who work with hazardous chemicals.

I. **Planning:** Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation. This includes reading the Safety Data Sheet for substances to be used.

II. Avoidance of Routine Exposure

- A. Use only those chemicals for which the quality of the available ventilation system is appropriate.
- B. Use appropriate personal protective equipment.
- C. Do not use mouth suction for pipetting or starting a siphon.
- D. Do not smell or taste hazardous chemicals.
- E. Discharge apparatuses which discharge toxic chemicals (vacuum pumps, distillation columns, etc.) into approved exhaust devices.
- F. Inspect gloves before use.
- G. Thoroughly wash areas of exposed skin immediately after handling hazardous chemicals.
- H. Do not eat, drink, chew gum or apply cosmetics in areas where hazardous chemicals are used.

III. Personal Protection:

- A. Wear appropriate eye protection.
- B. Wear appropriate gloves when the potential for contact with toxic materials exists per the Glove Selection Chart (Appendix D); inspect the gloves before each use, wash them before removal, and replace them periodically.
- C. Use any other protective apparel and equipment as appropriate.
- D. Know the location of all available safety and emergency equipment. This includes eye wash stations, safety showers, fire extinguishers, and first aid supplies.
- E. Confine long hair and loose clothing.
- F. Wear shoes. Do not wear sandals or perforated shoes.
- G. Wear clothing that minimizes skin exposure.

IV. Avoidance of Accidents

- A. Be alert to unsafe conditions and see that they are corrected when detected.
- B. Avoid practical jokes or other behavior which might confuse, startle or distract another worker.
- C. Do not work alone without cross check. See Section IV. 7b.
- D. Put items back where they belong after each use.
- E. Handle and store laboratory glassware with care to avoid damage. Do not use damaged glassware.
- F. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur.
- G. Use equipment only for its designed purpose.
- H. Compressed gas tanks: Handle with care. Do not move without protective cap. Secure tank at all times.

V. Use of Hood

- A. Use the fume hood for operations which might result in the release of toxic vapors or dust.
- B. Confirm adequate hood performance before use. Keep materials in hoods to a minimum and do not allow them to block vents or air flow.
- C. See Section IV. 2 for more information.

VI. Waste Disposal

- A. Deposit chemical waste in appropriately labeled receptacles.
- B. Follow FRCC's Hazardous Waste Management Program for information on correct disposal of hazardous waste.
- C. See Section VII for more information.

VII. Accidents and Spills

- A. Follow directions on Safety Data Sheets (SDS).
- B. Promptly clean up spills (See Section VII: Hazardous Waste Disposal and Spills).
- C. Isolate and deny entry to the affected area.
- D. Report all incidents to Campus Security and Preparedness and they will report to the CHO.

Appendix A (Part 2) – Standard Operating Procedures for students in any laboratory, class or studio where hazardous chemicals are used

The following form is an acceptable Safety Contract of standard operating procedures for students. Students shall sign the agreement individually or as a class. The Safety Contract shall be made available to students either as a part of the laboratory manual or during student training in a laboratory, class or studio as appropriate. The signature page should be scanned and kept electronically by the department. See Appendix C Roles and Responsibilities: Lead Instructor: may add additional information as deemed appropriate for their area. Departments and/or disciplines may also delete items from the list that do not apply to their area. Contact the Chemical Hygiene Officer (CHO) for any questions.

Appendix B – Front Range Community College Student Safety Agreement

Students shall abide by the following Standard Operating Procedures while using hazardous substances in the laboratory, class or studio.

1. Read procedures before entering the laboratory, class or studio. Do not proceed with an operation if you do not understand the procedure.
2. Eating and/or drinking are not permitted.
3. Pipetting by mouth is not allowed. Never place anything in the mouth where hazardous chemicals are in use.
4. Smell chemicals only by wafting a small amount of vapor toward the nose with the hand and only if approved by the instructor.
5. Personal protective equipment must be used at the direction of the instructor. This equipment includes safety glasses or goggles (inform instructor of the use of contact lenses), gloves when working with certain corrosives and organic solvents, and laboratory aprons or coats.
6. Wear clothing that minimizes skin exposure.
7. Long hair, chains, lanyards, loose fitting clothing, earbuds, etc., must be confined to prevent exposure to open flames, moving equipment, hazardous chemicals or other types of hazards as identified by the instructor.
8. All chemical names and identities should be carefully double-checked prior to any use. Check labeling before using a chemical so that potential hazards are known.
9. Fume hoods must be used for all operations which have the potential to release fumes, gases or volatile solvent vapors in excess of recommended exposure levels. Follow written procedures and the instructor's directions. Notify the instructor if you think the fume hood is not functioning properly.
10. No unauthorized experimentation is allowed. Do not deviate from written procedures without permission of the instructor.
11. Keep work area clear of book bags and outer clothing. These should be placed in areas provided. Students are responsible for maintaining a safe and clean work area.
12. Proper disposal of hazardous chemical waste is essential. Do not dispose of any chemical down sewer/sink or in regular trash without approval from the instructor. Use appropriate waste containers for hazardous chemical waste.
13. Students should know the location of all available safety equipment. This includes eye wash stations, safety showers, fire extinguishers, and first aid supplies.
14. Students **MUST** not work with hazardous chemicals in the laboratory, class or studio without an instructor present.
15. Report all injuries or exposures, no matter how minor, to the instructor. The instructor will give guidance on any appropriate treatment that is needed or call Campus Security if necessary.
16. Clean up spills promptly. If you have questions on spill clean-up, ask your instructor.
17. Only students registered for the class are allowed into the laboratory, class or studio.
18. Students should clean work area and wash hands thoroughly before leaving the laboratory, class or studio.

I have carefully read the precautions and procedures for safety. I understand the importance of good safety practices for my own welfare and for the welfare of others. I also understand that FRCC is not responsible for expenses incurred due to any injury that occurs during the laboratory, studio, or class sessions. I, therefore, pledge to follow the safety regulations of the college. (Note: Colorado State Law requires certain eye protection equipment.)

Course _____ **Instructor** _____

Printed Name _____ **Signed Name** _____

Date _____

OR
Use the following signature page

Front Range Community College Safety Agreement

I have carefully read the precautions and procedures for safety. I understand the importance of good safety practices for my own welfare and for the welfare of others. I also understand that FRCC is not responsible for expenses incurred due to any injury that occurs during the laboratory, studio, or class sessions. I, therefore, pledge to follow the safety regulations of the college. (Note: Colorado State Law requires certain eye protection equipment.)

Course _____ **Instructor** _____

	Printed Name	Signed Name	Date
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Appendix C – Roles and Responsibilities

Chemical Hygiene Committee

The Chemical Hygiene Committee is responsible for:

1. Setting college guidelines regarding faculty, staff, student, visitor, and contractor safety, within the scope of this Chemical Hygiene Plan.
2. Annually reviewing and updating the Chemical Hygiene Plan.
3. Identifying and implementing training material that relates directly to the Chemical Hygiene Plan.
4. Periodically visiting with each of the department's chair and/or supervisor and Chemical Hygiene Representative as needed to communicate the Chemical Hygiene Plan.
5. Reviewing the Chemical Hygiene portion of the Safety Committee.
6. Providing campus Vice Presidents with feedback regarding gaps in procedures, personal protective equipment needed to work safely with hazardous materials, and employees' potential training needs for the Vice Presidents to ensure gaps are closed, equipment is purchased and used correctly, and employees are trained.
7. Meeting periodically to discuss Chemical Hygiene issues college-wide and reviewing chemical accident and chemical exposure investigations for the purpose of updating the Chemical Hygiene Plan.

Membership of the Chemical Hygiene Committee:

1. Chemical Hygiene Chair appointed by the President (from current committee members as described below) – 2-year term renewable
2. Director of Campus Security and Preparedness – permanent member (Vice Chair)
3. 1 faculty rotation position from each of the three campuses (3-year term renewable)
4. 1 lab coordinator from each of the three campuses (with expertise in chemical handling) (permanent member)
5. Consultant – ex-officio member
6. Director of Facilities Management BCC - permanent member
7. Director of Facilities Management LC - permanent member
8. Director of Facilities Management WC – permanent member
9. One support staff (ex-officio) to manage meetings, materials, and follow-up (invited by Director of CSP)
10. Chemical Hygiene Past Chair – 1 year term

Chemical Hygiene Committee Chair (Acting as the Chemical Hygiene Officer)

The Chemical Hygiene Committee Chair is responsible for the following:

1. Communicating the Chemical Hygiene Plan college-wide by assigning a member to meet with each of the department's Chemical Hygiene Representative and/or supervisor or chair.
2. Coordinating within the Chemical Hygiene Committee to accomplish their charges.
3. Acting as a liaison between the College and the Safety Committees on Chemical Hygiene matters.
4. Coordinating and participating in the annual review and update of the Chemical Hygiene Plan.
5. Suspending operations in part or in whole after consultation with the appropriate department chair or supervisor and hiring authority as necessary. Operations will be suspended if deficiencies in procedures or equipment are judged to pose a significant hazard to the safety of the faculty, staff, or students.
6. Becoming the past Chair after the 2-year term whose duties include helping the new Chair transition in and maintain continuity.

Campus Security and Preparedness

Campus Security and Preparedness is responsible for the following:

Incident response:

1. Providing assistance as allowed by Campus Security's standard operating procedures to the department chair or supervisor in addressing an unsafe condition that poses a significant hazard to the safety of faculty, staff or students.
2. Responding to any reports of incidents involving injury, any chemical exposure, a significant chemical accident or spill.
3. Calling for advanced medical care due to the nature of a chemical accident or exposure, isolating and denying entry and contacting the local designated emergency response authority if required.

4. Investigating the incident when safe to do so while working with any response agencies and filing department an incident report. Response agencies may have a requirement to file their own incident report.
5. Contacting the Campus Security Director and the campus Vice President or other staff deemed appropriate depending on the scope and magnitude of the incident. The Campus Security Director will contact the college Communications Director and the college Vice President for Finance and Administration.
6. Preserving all appropriate documentations relevant to the incident with the incident report.

Other duties:

7. Conducting monthly fire extinguisher checks and overseeing the annual fire extinguisher maintenance program.
8. Providing the appropriate type of fire extinguisher for new programs that require a fire extinguisher.
9. Providing fire blankets for areas that utilize an open flame or other possible ignition source.
10. Providing first aid supplies that are relevant to the type of activities in the class, laboratory or studio.
11. Conducting monthly checks of first aid kits for expired or missing items.
12. Requesting a chemical inventory each semester from those departments that use, store, handle, or ship chemicals.

Safety Committee

Safety committee is responsible for the following:

1. Periodic safety inspections of each of the areas of the college.
2. Forward questions or concerns related to chemical safety to the Chemical Hygiene Committee.
3. If a committee member becomes aware of a chemical release or accident, the member should immediately report this information to Campus Security.

Facilities Department

Facilities department is responsible for the following:

1. Annual inspection of the plumbed eyewash stations and showers.
2. Annual inspection and certification of the fume hoods.
3. Regular preventive maintenance of the exhaust systems.
4. Maintaining documentation of the above inspections.
5. Coordination of chemical waste disposal.

Human Resources Department

Human Resources Department is responsible for the following:

1. Providing notices of training schedules and maintaining records of training attendees.
2. Maintaining records of information required by job description such as respirator fit tests.
3. Maintaining medical records of accident/incident reports.

Post-incident

1. **If a chemical exposure warrants medical attention, the HR Coordinator would be responsible for:**
 - a. Information provided to the physician. The employer shall provide the following information to the physician:
 - i. The identity of the hazardous chemical(s) to which the employee may have been exposed.
 - ii. A description of the conditions under which the exposure occurred including quantitative exposure data, if available.
 - iii. A description of the signs and symptoms of exposure that the employee is experiencing, if any.
2. **The HR Coordinator would be responsible for obtaining:**
 - a. Physician's written opinion.
 - b. For examination or consultation required under this standard, the employer shall obtain a written opinion from the examining physician which shall include the following:
 - i. Any recommendation for further medical follow-up.
 - ii. The results of the medical examination and any associated tests.
 - iii. Any medical condition which may be revealed in the course of the examination which may place the employee at increased risk as a result of exposure to a hazardous workplace.

- iv. A statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.
- v. The written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure.

Department Chemical Hygiene Representative

Department Chemical Hygiene Representative is responsible for the following:

1. Reviewing the Chemical Hygiene Plan on an annual basis.
2. Implementing the Chemical Hygiene Plan in the department.
3. Periodically visiting laboratory, class and studios to assess hazards.
4. Requesting chemical and procedure-specific training as needed.
5. Documenting specific operating procedures for work with the specific department's hazardous materials.
6. Being present during safety inspections to address issues and ask questions.
7. Working with their constituents to help improve safety with chemical handling, storage and transportation.
8. Coordinate approval of processes which need approval from CHC / chair or supervisor.

Campus Appointing Authority or Designee

Campus Appointing Authority or Designee is responsible for the following:

1. Following the instructor or employee requirements below.
2. Ensuring employees attend pertinent training on Chemical Hygiene Plan and that the plan is followed.
3. Contacting the college President in the event of an incident if necessary.
4. Consulting with the Chemical Hygiene Officer and Department Chair or Supervisor as necessary to suspend operations in part or in whole when deficiencies in procedures or equipment pose a significant hazard to the safety of the faculty, staff, or students.
5. Providing financial support, as available, to improve the Chemical handling, storage, and transportation on their campus.

Deans, Vice Presidents and President

Deans, Vice Presidents and president are responsible for the following:

1. Following the instructor or employee requirements below.
2. Ensuring employees attend pertinent training on Chemical Hygiene Plan and that the plan is followed.

Department Chair or Supervisor

Department Chair or Supervisor is responsible for the following:

1. Following the instructor or employee requirements below.
2. Ensuring employees attend pertinent training on Chemical Hygiene Plan and that the plan is followed.
3. Providing chemical and procedure-specific training as needed.
4. Documenting specific operating procedures for work with the specific department's hazardous materials.
5. Designating Department Chemical Hygiene Representative or acting as the representative.
6. Designating an appropriate employee to do monthly eyewash and shower inspections in coordination with Facilities Management Department.
7. Consulting with the Chemical Hygiene Officer to suspend operations in part or in whole when deficiencies in procedures or equipment pose a significant hazard to the safety of the faculty, staff, or students.
8. Assigning Lab Coordinator duties in departments without a Laboratory Coordinator.

Laboratory Coordinator

Laboratory Coordinator is responsible for the following:

1. Attending pertinent training on Chemical Hygiene Plan for:
 - a. Initial or new exposure potential.
 - b. Updates as new information occurs.
 - c. Refresher every 1 year.
2. Assuring that Personal Protection Equipment (PPE) and other protective equipment is available and in working order.

3. Promptly providing corrective action of nonfunctional equipment.
4. Maintaining teaching and stock room chemical inventories. This inventory will be updated at a minimum once per semester.
5. Maintain inventories using safe storage methods.
6. Maintain inventories of controlled substances and chemicals of interest, see Appendix G and Appendix H.
7. Ensure that all containers are correctly labeled.
8. Maintain Safety Data Sheets (SDS) on all chemicals in the inventory.
9. Appropriately dispose of hazardous wastes generated in the work area in coordination with facilities management.

Lead Instructor

Lead Instructor is responsible for the following:

1. Identifying hazards associated with the laboratory, classroom, and studio operations.
2. Writing and revising the procedures as necessary to maintain safe standard operating procedures in the laboratory, class and studio that all instructors and student must follow.
3. Identifying student training needs as described in the Chemical Hygiene Plan and communicating that to their instructors.
4. Ensuring that student training is met and documented, see Appendix B.
5. Maintaining documentation of student training for one semester.

Full Time and Part Time Instructors

Instructors are responsible for the following:

1. Attending pertinent training on Chemical Hygiene Plan for:
 - a. Initial or new exposure potential.
 - b. Updates as new information occurs.
 - c. Refresher every 1 year.
2. Maintaining safe standard operating procedures in the class, laboratory or studio by following the safety protocol prepared by the lead instructor.
3. Providing student training as described in the Chemical Hygiene Plan and ensuring training documentation.
4. Reporting missing, broken or malfunctioning safety equipment to Lab Coordinator or Department Chair.
5. Suspend operations if ventilation or other safety measures are judged to be inadequate for the procedure being conducted and report suspension to lead instructor or chair.
6. Promptly notify Campus Security when a significant chemical accident or spill occurs. A significant accident or spill is defined as one which:
 - a. Injury is caused by exposure to or use of chemicals;
 - b. Evacuation of the area is needed or required;
 - c. Any discharge to sewer or storm water drains occurs;
 - d. Any spill kit, eye wash, or safety shower is used;
 - e. Any additional equipment or assistance is needed for containment or clean up.
7. Notify the lead instructor or chair and other accident reporting requirements if are triggered (e.g. for programs with specific Reporting requirements.)

Employees / Student Hourly / Work Study Students

Employees who work with Chemicals are responsible for the following:

1. Attending pertinent training on Chemical Hygiene Plan for:
 - a. Initial or new exposure potential.
 - b. Updates as new information occurs.
 - c. Refresher every 1 year.
2. On an annual basis, reviewing the Chemical Hygiene Plan.
3. Adhering to all College and departmental safety guidelines and procedures and complying with safety directives issued by supervisors and Chemical Hygiene Committee.
4. Promptly filing an accident/incident report with Campus Security when if a significant chemical accident or spill occurs. A significant accident or spill is defined as one which:

- d. Injury is caused by exposure to or use of chemicals;
 - e. Evacuation of the area is needed or required;
 - f. Any discharge to sewer or storm water drains occurs;
 - g. Any spill kit, eye wash, or safety shower is used;
 - h. Any additional equipment or assistance is needed for containment or clean up;
5. Using personal protective equipment as appropriate.
 6. Reporting all incidents, accidents and potential chemical exposures to the Campus Safety and Preparedness, their supervisor, and the Chemical Hygiene Officer as well as other accident reporting requirements as triggered (e.g. for programs with specific reporting requirements.)
 7. Following operating procedures for work with department specific hazardous materials.

Students

Students who work with chemicals are responsible for the following:

1. Complying with all FRCC safety material provided to them either written or verbal.
2. Signing a safety agreement form.
3. Reporting incidents to the instructor or campus security if the instructor is unavailable.

Non-College Personnel

Visitors and contractors will follow all Front Range Community College Guidelines.

Appendix D – Glove Selection Chart

Gloves	Material	Usage	Comments	Recommended for	Not recommended
Nitrile	Synthetic Rubber	Incidental contact	Good for solvents, oils, greases, and some acids and bases. Clear indication of tears and breaks. Good alternative for those with latex allergies	Oils, greases, acids, caustics, aliphatic solvents	Aromatic solvents, many ketones, esters, many chlorinated solvents
Butyl	Synthetic Rubber	Extended contact	Good for ketones and esters. Poor for gasoline and aliphatic, aromatic, and halogenated hydrocarbons	Aldehydes, ketones, esters, glycol ethers, polar organic solvents	Aliphatic, aromatic and chlorinated solvents
Neoprene	Synthetic Rubber	Extended contact	Good for acids, bases, alcohols, fuels, peroxides, hydrocarbons, and phenols. Poor for halogenated and aromatic hydrocarbons	Oxidizing acids, bases, alcohols, oils, fats, aniline, phenol, glycol ethers	Chlorinated solvents
PVA	Poly-Vinyl Alcohol	Specific use	Good for aromatic and chlorinated solvents. Poor for water-based solutions	A wide range of aliphatic, aromatic and chlorinated solvents, ketones (except acetone), esters, ethers	Acids, alcohols, bases, water
PVC	Poly-Vinyl Chloride	Specific use	Good for acids, bases, oils, fats, peroxides, and amines. Good resistance to abrasions. Poor for most organic solvents	Strong acids and bases, salts, other aqueous solutions, alcohols, glycol ethers	Aliphatic, aromatic and chlorinated solvents, aldehydes, ketones, nitrocompounds
Viton	Fluoro-elastomer	Extended use	Good for chlorinated and aromatic solvents. Good resistance to cuts and abrasions. Poor for ketones.	Aromatic, aliphatic and chlorinated solvents, and alcohols	Some ketones, esters, amines
Silver Shield	Laminate			Wide range of solvents, acids and bases	

[Appendix E \(1\) – Unattended Operations Approval Form](#) and [Appendix E \(2\) – Approval for Use of PHS at FRCC](#)

[Appendix E \(1\) – Unattended Operations Approval Form](#), and Appendix E (2) – [Approval for Use of PHS at FRCC](#), are electronic forms. Please click on the form you wish to access. Follow the guidelines for filling out the form and submit as instructed. Contact the Chemical Hygiene Committee (chc@frontrange.edu) if you encounter difficulties with the form.

Appendix F – Safely Transporting Chemicals and other Hazardous Materials on Campus

Introduction

Safety is a high priority at FRCC. Transporting hazardous materials requires caution due to the potential for accidental release and personal exposure. Using the same care and caution during the transport that is used when handling these materials will reduce the potential for risk to the transporter, others, and the environment.

The following guidelines have been established for transporting toxic, flammable, reactive, or corrosive chemicals on campus. Individual departments may add more stringent requirements for transportation of these materials within campus buildings. The guidelines include, but are not limited to, movements between store rooms and work areas or between different work areas. Faculty, students, and staff participating in the on-campus transportation of chemicals are expected to follow the guidance established within this policy.

Exclusions: This policy does not apply to moves in which professional moving services will be contracted, moves to an external institution. Household or office movers are not permitted to move chemicals. Separate guidance is available in these scenarios from the CHC.

These guidelines do not apply to radioactive materials, compressed gasses, or to chemicals packaged for household use. For information on transporting radioactive materials, compressed gasses, contact the CHC.

Guidelines:

Potentially Hazardous Chemicals

Prior to transporting the material, the individual performing the transport must be familiar with the material's hazards so they can protect themselves and know what to do in the event of a release or spill. The Safety Data Sheet (SDS) for the material is a good source of information to review before the transport.

Materials that are unstable, explosive, or particularly hazardous should not be moved without first contacting the Campus Security & Preparedness Office.

1. Hazardous materials must be attended to at all times while being transported.
2. Individuals transporting chemicals must wear appropriate Personal Protective Equipment, (PPE), (See section IV. 3); appropriate attire must be worn while transporting chemicals. Additional personal protective equipment may be required if deemed necessary by a risk assessment. A pair of chemical resistant gloves must be maintained in a pocket for use as needed. To prevent the spread of contamination into public spaces, do not wear gloves in public, unless a spill or other incident dictates the precaution.
3. Chemicals must be transported in break-resistant secondary containers that are capable of containing all materials in the event of breakage or spill. Secondary containers are defined as commercially available bottle carriers made of rubber or plastic, with carrying handle(s). Chemicals may also be transported on sturdy, easily maneuverable carts with leak resistant sides of several inches in height on all four sides or in plastic totes on carts with rails on all four sides. Chemicals must not be carried without the secondary containment and support described in this policy.
4. Incompatible chemicals must be carefully segregated by moving incompatibles at different intervals and/or by using separate secondary containment vessels.

5. Plan your route to minimize travel time and distance while transporting chemicals. Be familiar with uneven surfaces, ramps, and blind corners along your route. Use added caution when moving material up or down grade.
6. Hazardous chemicals cannot be transported off campus, in a personal vehicle, or any form of public transportation, including the FRCC Courier Service without written approval from Chemical Hygiene Officer. The transportation of hazardous materials is regulated by the U.S. Department of Transportation.
7. See Appendix H, Chain of Custody for Controlled Substances, for more information on transporting controlled substances.

Appendix G – Emergency Planning and Community Right-To-Know Act and the Department of Homeland Security Inventory Requirements

FRCC is subject to two (2) key regulations which require the college to have knowledge of chemical inventories. The Emergency Planning and Community Right-to-Know Act requires the College to report quantities above specified thresholds for listed chemicals to state and local emergency planners. The Department of Homeland Security also has created a list of Chemicals of Interest based on threat criteria such as sabotage, theft, and release. All chemical facilities in the U.S. must report any chemicals of interest maintained above the screening threshold quantities. In order to remain compliant the College requires that inventories of the specific chemicals (listed in the tables below) be maintained. Since most laboratories work with low quantities of material the lists have been truncated to include only those chemicals which have a low reporting threshold. Chemical spills involving chemicals on the Emergency Planning and Community Right-to-Know Act list should be reported to FRCC Campus Security & Preparedness since specific reporting requirements may apply.

Staff should consult the complete EPA Consolidated List of Lists (at <http://www.epa.gov/rmp>) under “Most Requested Documents and Downloads” and the complete Department of Homeland Security’s Chemicals of Interest list (at <http://www.safetec.net/resources/dhs-chemicals-of-interest/>) when working with unusually large amounts of a hazardous chemical to determine whether the chemical should be included on their inventory. Contact the Chemical Hygiene Officer for any questions on inventory requirements.

Appendix H – Chain of Custody for Controlled Substances at FRCC

Controlled Substance: _____ DEA License Holder: _____

Current Location: _____ Destination: _____

Name	Signature	Date	Time	Location and Condition of Tamper Evident Tape (if applicable)

A COPY OF THIS FORM SHALL REMAIN IN THE POSSESSION OF THE RESPONSIBLE INDIVIDUAL CURRENTLY IN POSSESSION OF THE CONTROLLED SUBSTANCE.

ONCE COMPLETE, RETURN TO DEA LICENSE HOLDER FOR FILING.

Appendix I – Chemical Hygiene Inspection Checklist

Chemical Hygiene Inspection Checklist

This checklist will be provided as a guideline to the Campus Safety Committee as part of their periodic safety inspections.

Location/Area: _____

Area Inspected: _____

Inspected by: _____

Date of Inspection: ___/___/___

This checklist is under development.

References

Columbia University, Environmental Health and Safety, Safely Transporting Chemicals on Campus
<http://ehs.columbia.edu/chemtrans.html>

Flinn Scientific, Inc., Teacher Resources
<https://www.flinnsci.com/teacher-resources/safety/>

Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health (NIOSH),
NIOSH Pocket Guide to Chemical Hazards
<http://www.cdc.gov/niosh/npg/>

Duke University, Duke Occupational & Environmental Safety Office, Chemical Hygiene
<https://www.safety.duke.edu/laboratory-safety/chemical-hygiene>

The University of Utah, Environmental Health and Safety, Chemical Hygiene Plan
<http://ehs.utah.edu/research-safety/chemical-safety/chemical-hygiene-plan>

Princeton University, Environmental Health and Safety
<http://web.princeton.edu/sites/ehs/labsafetymanual/chp/Chemistry.html>

United States Department of Labor, Occupational Safety & Health Administration
<http://www.osha.gov>

OSHA Enforcement of Safety Data Sheet (SDS) Requirement:
<https://www.osha.gov/dsg/hazcom/index.html>

NFPA Fire Blanket reference:
http://www.nfpa.org/assets/files/aboutthecodes/45/lab-aaa_prefdminutes_11_12.pdf