CCS Administrative Procedure
2.30.05-D Chemical Hygiene for Laboratory Settings

Implementing Board Policy 2.30.05
Contact: Environmental Health & Safety, 533-8686

1.0 Purpose

Community Colleges of Spokane is committed to the health and safety of its faculty and staff, and in maintaining a safe and efficient workplace that complies with all local, state and federal safety and health regulations, programmatic standards, and with any special safety concerns identified at the unit level. The use of hazardous chemicals in CCS laboratories must adhere to this procedure to maintain a safe work environment for students, staff, and visitors.

Community Colleges of Spokane has adopted WAC 296-828 Hazardous Chemicals in Labs to protect employees who perform work where hazardous materials are used in a laboratory. For information regarding Biosafety for laboratory settings please refer to Administrative Procedure 2.30.05-T and for information regarding the Hazard Communication Program see Administrative Procedure 2.30.05-G.

2.0 Definitions

2.1 Chemicals: Any substance or mixtures of substances.

2.2 Chemical Hygiene Officer: an individual who must work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices for all laboratories. Requirements for Chemical Hygiene Officer are outlined in CCS Chemical Hygiene for Laboratories. This individual is designated by the Science Department Dean at each college and typically is the instructional technician supporting the chemistry program.

2.3 Chemical Hygiene Committee: A group of individuals who review and provide feedback on appropriate chemical safety practices for all Laboratory Activities utilizing chemicals. Please contact the college's Chemical Hygiene Officer for the current committee roster.

2.4 Chemical Hygiene Plan: a written plan that establishes procedures, equipment, personal protective equipment and work practices to protect individuals from the health hazards of the chemicals used in a laboratory.

2.5 Container: any container, except for pipes or piping systems that contains a hazardous substance. For example, it can be any of the following: barrel, bottle, can, cylinder, drum, reaction vessel, or storage tank.

2.6 Emergency: any event that could or does result in the unexpected significant release of a hazardous material.

2.7 Exposure: the contact an employee has with a hazardous material, whether or not protection is provided by respirators or other personal protective equipment (PPE). Exposure can occur through various routes of entry such as inhalation, ingestion, skin contact or skin absorption.

2.8 Hazardous chemical: any chemical which is classified as a physical hazard or health hazard, a simple asphyxiate, combustible dust, pyrophoric gas, or hazard not otherwise classified.

2.9 Hazardous material: Any chemical, biological, or physical material for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.

2.10 Hazardous waste: the term used by the Environmental Protection Agency to identify those solid wastes with properties that could pose dangers to human health and the environment

2.11 Health hazard: A chemical which is classified as posing one of the following hazardous effects: Acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation); respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in WAC 296-901-14022.

2.12 Label: an appropriate group of written, printed or graphic information elements concerning a Hazardous Material that is affixed to, printed on, or attached to the immediate container of a Hazardous Material, or to the outside packaging.

2.13 Laboratory: a facility where the "laboratory use of hazardous substances" takes place. A workplace where relatively small amounts of hazardous substances are used on a non- production basis.

2.14 Laboratory Supervisor: The individual who is responsible for the activities taking place in a laboratory. This includes, but is not limited to, faculty during laboratory instruction and Principle Investigators as defined below.

2.15 Laboratory use: the handling or use of hazardous substances for experimental purposes in a non-production environment.

2.16 Personal protective equipment (PPE): equipment specifically designed to avoid exposure to contact or inhalation of hazardous chemicals worn by those using or potentially exposed to hazardous materials.

2.17 Permissible Exposure Limits: PELs are employee exposures to toxic substances or harmful physical agents that must not be exceeded. To obtain PELs for Hazardous Chemicals, see chapter 296-841 WAC, Airborne Contaminants.

2.18 Physical hazard: a chemical that is classified as posing one of the following hazardous effects: Explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas.

2.19 Pictogram: A symbol plus other graphic elements intended to convey specific information about hazards.

2.20 Principle Investigator (PI): The individual who is directing research taking place in a laboratory. The PI has primary responsibility for establishing, following, and enforcing rules, procedures and methods for the proper control of Hazardous Materials. The PI is responsible for ensuring all research with Hazardous Materials is reviewed and approved by the Chemical Hygiene Committee. The PI is responsible for supervising the safety and performance of laboratory staff and students to ensure that required safety practices and techniques are employed.

2.21 Smoking: includes inhaling, exhaling, burning, carrying or possessing any lighted tobacco product; using an electronic nicotine delivery device or related product or using smokeless tobacco or any other device intended to simulate smoking.

2.22 Trained Spill Responder: An employee who has been trained and is authorized to clean chemical spills.

2.23 Safety Data Sheet (SDS) formerly known as Material Safety Data Sheet (MSDS). A standardized document containing information related to a toxic or hazardous material.

2.24 Waste minimization: using other chemicals, tools and equipment that enhance the health and safety of people while reducing impacts to the environment.

3.0 General Rules or Standard Operating Procedure (SOP)

3.1 Avoidance of Exposure

3.1.1 Employees shall observe written practices and procedures as established by the Laboratory Supervisor to control exposure.

3.1.2 Employees shall read the Safety Data Sheet (SDS) before handling a chemical for the first time and review the SDS frequently to keep well informed.

3.1.2.1 The Laboratory Supervisor is responsible for ensuring that all employees comply with the District Hazard Communication Program and Chemical Hygiene Plan.

3.1.3 Work areas should be kept clean and free of obstructions. Cleanup should be completed at the end of each operation and at the end of each day.

3.1.4 All chemicals should be stored in an approved location when not in use.

3.2 Prohibited Activities

3.2.1 Eating and drinking.

3.2.2 Smoking and related activities.

3.2.3 Horseplay or unsafe behavior.

3.2.4 This list is not exhaustive. Consult the Laboratory Supervisor for additional specific prohibitions.

4.0 Choice of Chemicals

4.1 The least hazardous material which will be effective in any given task or procedure should be used.

4.1.1 The Laboratory Supervisor can assist in making a determination of relative risks of materials and in suggesting possible substitutions.

4.2 The smallest amount of hazardous materials needed to be effective in any given task or procedure should be used.

4.3 The Chemical Hygiene Committee must approve the use of any new hazardous material prior to the material being introduced into a Laboratory. Potential hazards and the appropriate safety precautions must be determined before any new chemical is introduced into the laboratory. The Committee will consult with the Biosafety and/or Chemical Hygiene Officer as appropriate.

5.0 Container Labeling

5.1 The Laboratory Supervisor must verify that hazardous material containers are labeled in accordance with CCS Administrative Procedure 2.30.05-G Hazardous Communication Program requiring:

5.1.1 Clear labeling identifying the contents;

5.1.2 Appropriate hazard warning(s) (e.g. Flammable, Corrosive, Reactive, Toxic, etc.);

5.1.3 The names, addresses, telephone numbers of the manufacturer and any appropriate pictogram(s).

5.2 The Laboratory Supervisor must ensure that all secondary containers are labeled in accordance with Hazard Communication Standard and Global Harmonization System of Classification and Labelling of Chemicals (GHS) and tagged, or marked with:

5.2.1 Clear labeling identifying the contents, date of receipt, and/or preparation and name of preparer.

5.2.2 Appropriate hazard warnings.

5.3 The Laboratory Supervisor must be notified immediately if any unmarked containers are discovered.

6.0 Storage and Handling

6.1 Prevention of exposure or emergency in chemical storage and handling areas is based partly on careful and appropriate containment, labeling, handing and avoiding unintentional mixing of hazardous materials.

6.2 The Laboratory Supervisor is responsible for ensuring that incompatible materials are separated or segregated based upon the health or physical hazards associated with the material.

6.2.1 Contact the Chemical Hygiene Officer or Chemical Hygiene Committee if you require assistance in identifying the storage requirements for a hazardous material.

6.3 The Laboratory Supervisor shall ensure that all hazardous materials are stored in secured areas.

6.4 Used Hazardous Materials must be handled and stored so that there is no confusion about use or mixing with fresh chemicals.

7.0 Personal Protective Equipment

7.1 The Laboratory Supervisor (or a designated employee) will perform a hazard assessment for their area(s) of responsibility to determine appropriate personal protective equipment (PPE) for laboratory activities. Please refer to CCS Administrative Procedure 2.30.05-W Personal Protective Equipment Provision, Use and Care.

7.2 Appropriate PPE must be used to reduce exposure to Hazardous Materials. PPE includes, but is not limited to, face and eye protection, gloves, respirators, protective aprons and lab coats.

8.0 General Practices for Working with Chemicals or Hazardous Materials

8.1 Follow the written procedures and rules that have been established by the Laboratory Supervisor

8.1.1 Always wear the minimum protective clothing and equipment that is recommended by the Safety Data Sheet or written laboratory procedure.

8.1.2 Whenever possible, work within a ventilated hood. Use only the minimum quantities of the chemical required.

8.1.3 When mixing acids or bases with water, always add the agent to the water to avoid violent reaction or spattering.

8.2 Laboratory Physical Space Requirements

8.2.1 Hazardous Materials signs must be posted where such materials may be present.

8.2.2 Appropriate signage must be posted on or near the laboratory entry.

8.2.3 Appropriate signage must be posted on any cabinet, refrigerator, or freezer where Biohazardous Agents are present.

8.2.4 Hazardous Materials in the laboratory should be kept separate from general classroom materials.

9.0 Unsecured Chemicals or Hazardous Materials

9.1 The Laboratory Supervisor will ensure an unattended laboratory is secured.

9.2 Leave light switches on in area of an unattended laboratory operation.

9.3 Post signage on the entry of the Laboratory that, briefly describes the nature of the unattended operation, lists any hazardous materials, and provides the contact information of the Laboratory Supervisor.

9.4 Provide for the containment of Hazardous Materials in the event of failure of a utility service

9.5 If an apparatus is likely to be left unattended for long periods of time, electrical overload-protection devices should be used.

9.6 Open flames must never be left unattended.

10.0 Chemical Spill Response

10.1 The Chemical Hygiene Officer will post emergency procedures for chemical release/spill/explosion in appropriate areas. Refer to CCS Emergency Management Plan--Immediate Actions for Specific Emergencies.

10.1.1 The name, location and emergency contact information for the Trained Spill Responder(s) will be posted and maintained in areas designated as appropriate by the Chemical Hygiene Officer.

10.1.2 Employees are encouraged to contact the Laboratory Supervisor whenever the severity of the spill is uncertain or in question.

10.1.3 Chemicals spills that do not present a Health Hazard may be handled by employees who have been trained and are wearing appropriate PPE.

10.2 Mercury spills shall not be handled by anyone other than the Laboratory Supervisor or the Trained Spill Responder(s). Mercury spill kits will be maintained and located in those areas determined appropriate by the Chemical Hygiene Officer.

11.0 Laboratory Waste Management

11.1 All chemical waste must be disposed of in a legal and appropriate manner.

11.2 The Chemical Hygiene Committee will make all Laboratory Supervisors aware of appropriate procedures through informational materials and periodic safety training.

11.3 Laboratory Supervisors are responsible for ensuring biohazardous waste procedures are followed in their laboratory.

11.4 Copies of the training records will be maintained in the Environmental Health and Safety Office and in the Human Resources Office.

11.5 All waste generated in laboratory activities will be managed in designated waste collection containers with appropriate labels (see section 5.0).

11.6 Disposal procedures are established in accordance with federal, state and local laws and are subject to change. Contact the Laboratory Supervisor or Chemical Hygiene Officer for current information.

11.7 When planning a laboratory activity, waste minimization must be a primary consideration.

12.0 Employee Information and Training

12.1 Employees shall be made aware that there are potential risks in all activities involving chemicals and will be provided with a copy of this procedure and CCS Administrative Procedure 2.30.05-G Hazard Communication Program.

12.2 It is the responsibility of the appropriate Dean(s) to ensure that personnel in their divisions are informed of the location and availability of reference materials on the physical and health hazards of the chemical found in their workplace.

12.2.1 This information should include the safe handling, storage and disposal of hazardous chemicals in the lab. Such information may be provided by a number of means, including: this document, printed references, video tapes, classroom training and on-the-job training.

12.3 Existing training programs must be reviewed periodically to update information about the lab standard. The Chemical Hygiene Committee should review and revise their safety training programs annually.

12.4 Laboratory Supervisors must ensure that any safety instruction given in their laboratory is up-to-date with current lab standards as defined by the Chemical Hygiene Committee.

12.5 Employees shall be made aware that there are potential risks in all activities involving chemicals and will be provided with a copy of this procedure.

12.6 All training will be documented with records maintained in the employee's personnel file and copies forwarded to the Human Resources Office.

13.0 Housekeeping

13.1 Laboratories should be kept free of clutter. Working areas should be cleaned up at the end of each operation and at the end of each day.

13.2 Safety showers, eyewashes, and fire extinguishers shall be free from any obstruction that would prevent access and use. Access to emergency exits shall be kept clear at all times.

13.3 Circuit breaker panels shall have an unobstructed clearance of 30".The floor shall be kept clean and free of slip hazards by reasonable cleaning and immediate cleanup of spills.

14.0 Inspection and Maintenance of Protective Devices

14.1 All automatic shutoff devices should be tested in accordance with manufacturer recommendations to ensure proper operation.

14.2 Fume hood and other protective equipment must function properly. Specific measures must be taken to ensure proper and adequate performance of all ventilation systems. Testing of fume hoods/exhaust fans will follow industry standards and vendor specifications.

14.3 Explosion shields and isolation devices should be visually inspected by the user for cracks or other damage before each use.

14.4 Safety showers and emergency eyewashes shall be activated and inspected according to the CCS Emergency Washing Facilities Protocol.

14.5 Tags indicating date inspected and the inspector will be attached to showers and eyewashes.

14.6 First aid kits will be available to Laboratory Supervisors with stocked supplies and shall be inspected as appropriate.

15.0 Medical Consultation and Examinations

15.1 CCS will provide all persons involved in the laboratory use of chemicals an opportunity to receive medical attention, including any follow-up examinations that the examining physician determines to be necessary, under the following circumstances.

15.1.1 Whenever an employee develops signs or symptoms associated with hazardous chemicals to which the employee may have been exposed in the laboratory;

15.1.2 When industrial hygiene monitoring in a laboratory reveals an exposure level routinely above the Permissible Exposure Limit; or

15.1.3 Whenever an event takes place in the laboratory such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure.

15.2 CCS will provide the following to the physician:

15.2.1 The identity of the hazardous chemical(s) to which the employee or student may have been exposed and a copy of the SDS, if available;

15.2.2 A description of the conditions under which the exposure occurred including quantitative exposure data, if available; and

15.2.3 A description of the signs and symptoms of the exposure that the employee or student is experiencing, if any.

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