



South Central
COLLEGE

**South Central College
North Mankato/Mankato Campus
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Faribault Campus
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Chemical Hygiene Plan

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SCOPE AND APPLICATION

The Federal OSHA Lab Standard, 29 CFR 1910.1450 mandated the requirements for a Chemical Hygiene Plan. It applies to all science laboratories and employees/students working in laboratory operations involving laboratory use of hazardous chemicals.

PURPOSE

The purpose of this document is to protect employees/students from chemical health hazards and to comply with the OSHA Standard for Occupational Exposures to Hazardous Chemicals in Laboratories, Title 29 Code of Federal Regulations 1910.1450.

PLAN

The South Central College Chemical Hygiene Plan (CHP) contains procedures, guidance and work practices necessary to protect personnel working in laboratories. The intent of this plan is to not exceed legal exposure levels and to maintain exposure to hazardous chemicals at the lowest practical level. The CHP must be readily available to employees/students. The Chemical Hygiene Plan lists the minimum requirements for a lab. Copies of the document are available from the Chemical Hygiene Officer and at [Chemical Hygiene Plan](#). Copies of associated documents reflecting PPE hazard assessment or training records are located with Human Resources or with the Security & Safety Director.

DEFINITIONS

Laboratory Employees: This includes specific faculty/deans/student workers/student work studies connected to the science areas of the college.

Laboratory Students: This includes students enrolled in a college course that requires laboratory work and are in the laboratory in a learning environment.

Support Personnel: This includes custodial or maintenance staff or delivery personnel who may be exposed to potential physical or chemical hazards from laboratory operations.

Each individual working in a laboratory setting should be informed about hazards associated with that laboratory and the specific types of operations taking place.

RESPONSIBILITIES

South Central College is responsible for providing a safe workplace and learning environment for employees/students and in complying with OSHA regulations. The college has designated a Chemical Hygiene Officer who is qualified by education and experience to provide technical guidance in the development of this site specific plan. The CHP must be reviewed on an annual basis and updated as necessary.

Each department/area is responsible for implementing the minimum requirements of the Chemical Hygiene Plan both with students and laboratory employees.

Laboratory locations include the following areas/rooms:

North Mankato Campus

Chemistry Laboratory: C-165

Biology Laboratories: C-114, C-121, C-123, C-104

Faribault Campus

Chemistry Laboratories: B-115 & B-114

Biology Laboratories: B-112 & B-114

Chemical Hygiene Officer

1. Work with Administrators, Security & Safety Director, and Maintenance Supervisors to develop and implement acceptable, appropriate chemical hygiene guidance and procedures
2. Monitor procurement and use of chemicals in the laboratory
3. Ensure that laboratory facilities and training levels are adequate for the chemicals in use
4. Perform regular and formal chemical hygiene and housekeeping inspections that include inspections of emergency equipment with the assistance of the Security & Safety Director and the Maintenance Supervisors.
5. Maintain a current chemical inventory of science chemicals present within the college property
6. Assist with annual review of the Chemical Hygiene Plan
7. Maintain overall responsibility for the safe operation of the Chemistry and Biology Laboratories
8. Assist workers/students to learn and follow the chemical hygiene rules, determine the proper level of personal protective equipment, and ensure that such protective equipment is available and in working order
9. Assist the Security & Safety Director to ensure appropriate training has been provided to employees
10. Monitor the hazardous waste disposal and assist the maintenance supervisors and Security & Safety Director on disposal concerns

Laboratory Assistants/Work Study/Student Worker

1. Monitor procurement and use of chemicals
2. Perform regular, formal chemical hygiene and housekeeping inspections
3. Maintain a current inventory of chemicals and SDSs
4. Ensure that protective equipment is available and in working order
5. Maintain weekly inspection logs of the hazardous waste satellite storage area
6. Check in and out potentially and extremely hazardous chemicals

Other Employees Authorized Access

1. Follow all health and safety procedures and rules as outlined in the CHP
2. Report all hazardous conditions to the Chemical Hygiene Officer, Security & Safety Director, Maintenance supervisor or appropriate Dean immediately

3. Report any job-related chemical injury or illness to your supervisor and seek treatment as soon as possible
4. Refrain from the operation of any equipment or instruments without proper instruction and authorization
5. Wear or use prescribed personal protective equipment
6. Remain aware of the hazards of all chemicals in the laboratory and how to handle hazardous chemicals safely
7. Request information and training when unsure about how to handle an unfamiliar or hazardous chemical or procedure

Instructors

1. Familiarize themselves with all potential hazards within the lab and learn how to minimize the risks associated with these hazards
2. Ensure that all students conduct all laboratory experiments in accordance with prescribed chemical hygiene procedures. This includes enforcing the use of necessary personal protective equipment, educating students about appropriate chemical handling, and disposal procedures
3. Educate students about relevant chemical hazards within the laboratory, share the Chemical Hazardous Waste In Laboratory/Classroom Rules For Safe Handling document with students
4. Show students where to find and how to use chemical safety equipment (chemical shower, eye wash)
5. Report any chemical related injury or illness to Public Safety and appropriate Dean and seek treatment as soon as possible
6. Observe proper process for reporting student accidents and injuries
7. Responsible for safety and compliance in their labs

Students

1. Students are responsible for planning and conducting each operation in accordance with prescribed chemical hygiene procedures as outlined by instructors.

Standard Operating Procedures for Laboratory Chemicals

A. Chemical Procurement

1. The decision to procure and reorder chemicals shall be completed by the Instructor and approved by the Chemical Hygiene Officer. Safety Data Sheets must accompany a procurement and shall be updated on reorders if the current SDS is 3 years or older. The Security & Safety Director as well as appropriate campus maintenance supervisor will be made aware of new chemical procurement prior to the fact.
2. Instructors requesting new chemicals must evaluate chemicals for waste produced and safer alternatives.
3. The Security & Safety Director in conjunction with the campus appropriate maintenance supervisor will research the new proposed chemical through the SDS prior to procurement. If upon investigation the chemical is extremely hazardous, extremely flammable, explosive, or difficult to dispose of, they may not approve procurement or ask that an alternative chemical be procured. In addition, chemicals used in the laboratory shall be those which are appropriate for the ventilation system.

4. All chemicals must be received in a central location. When the chemicals are received by South Central College they will transport the material with the original packaging intact. The appropriate science area is responsible to return any packaging slips to the business office.

Chemical Storage

1. All chemical shipments should be addressed to the appropriate instructor. Any alternative process must be discussed with the Chemical Hygiene Officer before proceeding. Chemical containers shall not be accepted without accompanying labels. The company should be contacted if appropriate labels are missing. The appropriate instructor should accept, open, date and inventory chemicals when received. Received chemicals shall be immediately moved to a designated chemical storage area by the instructor.
2. The storage area shall be well-illuminated. Flammables will be stored in a designated flammable storage cabinet in the chemical storage area. Chemicals must be segregated by hazard classifications and compatibility in a well identified area. Mineral acids should be segregated from flammable and combustible materials. Separation is defined by NFPA 49 as storage within the same fire area but separated by as much space as possible or by separating storage from incompatible materials. Acid resistant trays shall be placed under bottles of mineral acids as well.
3. Acids will be stored in a cabinet appropriate for its isolation needs.
4. Oxidizers will be stored in an area appropriate for its isolation needs.
5. Acid sensitive materials, such as cyanides and sulfides, shall be separated from acids or protected from contact with acids and water.
6. Highly toxic chemicals or other chemicals whose containers have been compromised shall be stored in a labeled unbreakable secondary container (over pack container).
7. Storage of chemicals at a lab bench or other work area shall be limited to those amounts necessary for one operation – as small as practical.
8. Fume hoods in the science labs may not be used for chemical storage or evaporation of chemical wastes. Evaporation for the purpose of disposal is an Environmental Protection Agency (EPA) violation and is strictly prohibited.
9. All stored chemicals shall be examined at least annually, but more frequently if appropriate, by the Chemical Hygiene Officer for container integrity and/or deterioration. The inspection will determine whether any corrosion, deterioration, or damage has occurred to the storage containment as a result of leaking chemicals. Leaking chemicals will be disposed of appropriately.
10. Prohibited items include: mercury, controlled substances (excludes derivatives), radioactive waste streams, and any other chemical not approved for procurement by the Chemical Hygiene Officer. When discovered, the appropriate science area will be responsible for cost of immediate disposal.

Chemical Handling

General precautions that must be followed for the handling and use of all chemicals are:

1. Skin contact with chemicals should be avoided whenever possible.
2. Employees and students shall wash hands prior to leaving the laboratory. Hand soap is provided within each lab.
3. Mouth suction for pipetting or starting a siphon is prohibited.
4. Eating, drinking, smoking, or application of cosmetics in the laboratory is prohibited.
5. Storage of food or beverage is not allowed in storage areas or refrigerators used for chemical laboratory operations.

6. Determination of risks shall be conservative in nature and substances of unknown toxicity shall be assumed toxic.
7. Any chemical mixture shall be assumed to be as toxic as its most toxic component.
8. Laboratory instructors shall be familiar with the symptoms of exposure for the chemicals which they work with and the precautions necessary to prevent exposure.
9. In all cases of chemical exposure neither the Permissible Exposure Limits (PEL's) of OSHA or the Threshold Limit Values (TLV's) of the American Conference of Governmental Industrial Hygienists (ACGIH) shall be exceeded.
10. Engineering controls and safety equipment in the laboratory shall be utilized and inspected in accordance with guidelines established in this plan.
11. Specific precautions based on the toxicological characteristics of individual chemicals shall be implemented as deemed necessary by this plan.

Laboratory Equipment and Glassware

All chemicals and equipment shall be properly labeled. When working on a task work in a clean and uncluttered area. In addition, appropriate lab procedures will be followed but not limited to the following:

1. All laboratory equipment shall be used only for its intended purpose.
2. All glassware will be handled and stored with care to minimize breakage; all broken glassware will be immediately disposed of in the sharp objects container (includes razor blades, pins, scalpels, broken glass, etc.).
3. All evacuated glassware shall be shielded to contain chemicals and glass fragments should implosion occur.
4. Any experiment with the potential for explosion shall be shielded to contain chemicals and glass fragments.
5. Labels shall be attached to all original chemicals containers, identifying the contents and related hazards; all other containers should be labeled with the name of chemical, concentration, and formula, as appropriate.
6. Waste receptacles shall be properly labeled.
7. All laboratory equipment shall be inspected by the Chemical Hygiene Officer on a periodic basis and replaced or repaired as necessary.
8. Matches are not allowed in labs. Bunsen Burners must be lit by flint strikers. Lighters, that immediately extinguish after trigger is let go, are also allowed.

Personal Protective Equipment

Safety glasses/goggles meeting ANSI Z87.1-2003 are required for employees, students, and visitors to the laboratory and will be worn at all times when chemicals/glassware are being used or manipulated in the laboratory and when there is a need for eye splash protection. Chemical goggles and/or a full face shield shall be worn during chemical transfer and handling operations as procedures dictate. Chemical goggles shall be sanitized after student use.

Chemical resistant aprons/lab coats shall be provided as required.

Appropriate (Nitrile) chemical-resistant gloves must be worn at all times when there exists the potential for skin contact with chemicals. Multiple use gloves shall be inspected and decontaminated prior to use. Damaged or deteriorated gloves will be immediately replaced.

Personal Work Practices

All employees working in laboratories shall be trained on safe laboratory work practices and how to minimize risk in all laboratory procedures.

Labeling

All containers of hazardous chemicals must be correctly labeled as described below. Labels for stationary and portable containers will be provided by each department or the Security & Safety Director.

All hazardous chemicals and/or products shall be subject to the labeling requirements of the Hazard Communication Standard. The use of unmarked containers will not be permitted.

Each original shipment container, portable container, and stationary process container shall include the appropriate hazard warning for each chemical, or mixture as a whole, based on the method of hazard determination [OSHA 29 CFR 1910.1200(d)(2)]. Specifically, each original, incoming container shall be labeled, tagged, or marked by the manufacturer/distributor with the following minimum information:

1. Trade name or chemical name given on the SDS.
2. The appropriate hazard warning, including health, flammability, reactivity, and preferably, personal protective equipment data.
3. Name and address of the manufacturer, importer, or other responsible party.

Labels and other forms of warnings must be legible and prominently displayed. Existing labels on incoming containers shall not be removed or defaced unless the container is empty of its original materials.

Secondary containers (safety cans, plastic bottles, etc.) will be labeled with the chemical name, trade name if appropriate, and/or chemical formula. Hazard warnings (health, reactivity, flammability, PPE) are required. Secondary containers containing solutions should be labeled with the date of preparation, solution concentration, and solvent.

Secondary containment (pails, buckets with covers, and/or absorbent sufficient to prevent or contain an accidental spill) must be used while transporting or moving chemicals. It is highly recommended to use secondary containment when traveling from prep area to labs and lectures.

Containers too small to label completely shall at least be labeled with the chemical formula, and/or chemical name (or trade name, if appropriate). The container shall be stored on or near a card (for example a 3"x5" card) containing information not found on the label.

Any bottle that is re-used shall have the original label removed and an appropriate label placed on it. Chemical containers must be monitored by the Chemical Hygiene Officer or designee to ensure that they are properly labeled. Incorrect labels must be corrected immediately.

Extremely hazardous materials should also be marked with a label identifying its extreme hazards. These substances must be checked in and out by the Instructors. Questions regarding the need for special labeling should be directed to the Chemical Hygiene Officer.

Compressed Gas Cylinders

Compressed gas cylinders are to be stored and maintained in a secure position at all times. Delivery of cylinders to any science area shall be done by a trained individual (vendor, employee etc.). If cylinders are not to be in use after 4 weeks, the cylinders must be capped.

Autoclaves

Autoclaves shall be serviced at least every 2 years. Malfunctions should be reported to the campus appropriate maintenance supervisor. The Chemical Hygiene Officer will be the contact for the autoclaves in the science or medical area. Any operation of an autoclave must be done under the supervision of the appropriate campus maintenance supervisor and their appropriate boiler's license.

CRITERIA FOR IMPLEMENTATION OF CONTROL MEASURES

When to use fume hoods:

All employees using fume hoods must be trained on the appropriate use of fume hoods. Processes that have potential for generating hazardous airborne chemical concentrations should be carried out within the fume hood. Hoods should be used **whenever possible** to contain and exhaust toxic, offensive, flammable, carcinogenic, mutagenic, and/or teratogenic material/agents. Fume hoods will be tested annually for effectiveness and results forwarded to the Chemical Hygiene Officer as well as the Security & Safety Director and campus appropriate maintenance supervisor for documentation.

Personal protective measures:

Eye protection – Safety goggles or laboratory splash glasses must be worn by all personnel in the laboratory whenever hazardous chemicals are in use. Student eye protection is available for purchase in the bookstore. **No Exceptions.**

Gloves – Gloves should be worn to protect the skin from chemical and physical (e.g., heat, cold) exposures.

Safety Shields – Safety Shields must be used where the possibility exists for laboratory scale detonation.

Other manipulation devices - Protective devices, such as long and short handled tongs for holding or manipulating hazardous items should be used whenever necessary.

When to institute special work practices:

Special work practices must be approved by the Chemical Hygiene Officer. If extremely hazardous chemicals are to be used specific work practices and work locations must be designated.

Safety Data Sheets (SDS)

SDSs and other reference information for all chemicals will be kept on file in the laboratory where they are used. It is the responsibility of the individual instructors and the Chemical Hygiene Officer to ensure that these SDS files are maintained and updated.

SDSs must be reviewed prior to working with any new chemical. In addition, review of SDSs shall occur every 3 years for all other chemicals.

All new or updated SDSs added in any laboratory, must prompt notification of the Security & Safety Director as well as the campus appropriate maintenance supervisor.

The SDS Secondary Book is located in the mailroom at the North Mankato Campus and the Administrative Offices at the Faribault Campus.

TRAINING AND INFORMATION

Everyone who works with or is exposed to potentially hazardous chemicals in a laboratory will receive training on the Occupational Exposure to Hazardous Chemicals in Laboratories Standard. The intent of training is to assure all individuals are informed about hazards and protection when working in the lab.

Requirements

Initial training is mandatory prior to assignment to the lab and working with hazardous chemicals. The Chemical Hygiene Officer will ensure all faculty/instructors are trained in 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories Standard prior to working with any students. Faculty/instructors will ensure that all mandatory training is completed with students prior to working in the lab.

Employee/student training will include:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical.
- The physical and health hazards of chemicals in the work area.
- The measures that can be used to protect themselves from these hazards.
- The applicable details of this plan.

Site specific training: Every person covered under this specific plan will receive site specific training. For faculty/instructors this will be done by the South Central College Chemical Hygiene Officer or designee. Faculty/instructors will be responsible to train students in site specific information.

A record of all training conducted will be kept with South Central College Chemical Hygiene Officer and the Security & Safety Director.

Medical Consultation and Examination

An employee/student who works with hazardous chemicals and develops symptoms associated with hazardous chemicals or injures themselves at work shall follow the First Report of Injury process and/or seek information from the Chemical Hygiene Officer, Human Resources, or the Security & Safety Director.

Call 9-1-1 or dial 6 to access campus emergency medical response in case of an emergency.

A First Report of Injury must be filled out by the employee/student and their Instructor/Supervisor/Dean. The First Report of Injury should then be forwarded to the Safety Administrator within **24 hours** of the incident. First Report of Injury Packets are located in Human Resources.

SPILLS AND EMERGENCY PLANS

EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT/HAZ MAT: 911

EMERGENCY MEDICAL SERVICE: 911

LAW ENFORCEMENT: 911

MINNESOTA DUTY OFFICER: 1-800-422-0798

NATIONAL RESPONSE CENTER: 1-800-424-8802

CHEMTREC: 1-800-262-8200

SECURITY & SAFETY: 507-389-7412/507-995-4021

BUILDING MAINTANENCE (Emergency):

North Mankato Campus: 507- 327-2614/507-995-0299

Faribault Campus: 507-271-4265/507-384-7281

Refer to Critical Incident Team/Policy of Emergency Communications (RED CARD) for individual contact information also attached to this policy.

See Campus Safety Map for locations of:

Fire Extinguishers

Fire Alarm Pull Stations

Spill Control Materials

For all information refer to Emergency Action Plan or All Hazard Guidance Manual.

WASTE DISPOSAL

All general waste disposal procedures on the SDS will be followed. If waste disposal procedures are unknown contact the Chemical Hygiene Officer, Security & Safety Director or the campus appropriate maintenance supervisor. All accumulated hazardous waste must be stored in the satellite storage area and be inspected weekly by the Chemical Hygiene Officer. All waste containers must be labeled to indicate the contents of the container. Disposal of hazardous waste should be coordinated through the Chemical Hygiene Officer, Security & Safety Director as well as the campus appropriate maintenance supervisor. Dissected/Pathological waste must be put in the appropriate containers in the Biology prep area. The Chemical Hygiene Officer is responsible for proper disposal. Manifest and invoices should be sent to the Security & Safety Director as well as the campus appropriate maintenance supervisor. Contact these personnel if you have hazardous waste to dispose of.

REVIEW AND UPDATE

This Chemical Hygiene Plan will be reviewed annually and updated by the South Central College Safety Committee or Security & Safety Director and any STEM employee that would like to participate.