

# Flathead Valley Community College Chemical Hygiene Plan

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## 1.0 Introduction

Flathead Valley Community College (FVCC) is committed to providing safe learning, teaching and working environments for students, faculty and employees. The safe storage, use and disposal of chemicals in the laboratory require policies for the protection of students, employees, and the environment. The purpose of this chemical hygiene plan (CHP) is to provide the chemical user with basic safety information regarding the use of chemicals. The guidelines set forth in this chemical hygiene plan form the foundation of the safe use of chemicals in the laboratory and work place.

This chemical hygiene plan applies to all laboratories at Flathead Valley Community College, except those clinical laboratories located at Kalispell Regional Hospital. The hospital has its own chemical hygiene plan.

## 2.0 Responsibilities

It is the responsibility of all administrators, faculty, staff and students to promote safety awareness. The Flathead Valley Community College Safety Committee (FVCCSC) is responsible for recommending to the President the minimum requirements of the CHP that all laboratories must follow. The FVCCSC will review the CHP annually.

Department chairpersons are responsible for maintaining compliance with the CHP and each laboratory instructor has the overall responsibility for compliance with the CHP in his or her laboratory. This responsibility may not be shifted to inexperienced or untrained personnel. The instructor must assure that anyone entering the laboratory knows and follows the chemical hygiene rules, appropriate protective equipment is used, appropriate training has been provided to all occupants of the laboratory and unsafe acts, conditions or inadequate facilities are reported to the Coordinator of Instructional Safety and Chemical Hygiene. Each laboratory instructor will train lab students in laboratory safety during their first lab class and have each student sign a laboratory accident prevention contract. Individual laboratory users are responsible for planning and conducting each operation in accordance with the standard operating procedures (SOP) outlined in this CHP, wearing safety glasses/goggles in the laboratory when appropriate, developing good laboratory hygiene habits and reporting unsafe acts or conditions to the Coordinator of Instructional Safety and Chemical Hygiene.

The Coordinator of Instructional Safety and Chemical Hygiene is responsible for working with faculty, staff, students, and others to develop and implement appropriate chemical hygiene practices and procedures. The Coordinator of Instructional Safety and Chemical Hygiene will also establish procedures to monitor the procurement, use, and disposal of chemicals used in laboratories, to assure, on a periodic basis that appropriate laboratory chemical hygiene practices are conducted and that records are maintained, help laboratory instructors develop precautions and adequate facilities and know the current legal requirements for regulated substances.

## 3.0 Standard Operating Procedures (SOP)

The Coordinator of Instructional Safety and Chemical Hygiene has developed *Standard Operating Procedures* (SOP) for chemical and physical hazards commonly found in Flathead Valley Community College Laboratories. These SOPs define the minimum use and handling procedures permitted at the College. Adherence to the SOPs by all Flathead Valley Community College lab users is mandatory. It is the responsibility of the laboratory instructor of each laboratory to review the SOPs and assure that the protective equipment and procedures outlined are in place.

### 3.1 General Employee Rules and Procedures

- Minimize all chemical exposures.
- Skin contact with chemicals should be avoided.
- Avoid underestimation of chemical hazards and risks.
- Wear appropriate eye protection at all times. Safety glasses/goggles must be worn any time chemicals, glassware or heat are used in the laboratory.
- Promptly clean up spills using appropriate protective apparel and equipment and proper disposal.

- Never allow practical jokes or other behavior which might confuse, startle or distract another worker.
- Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.
- Do not leave operations unattended.
- As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substance with a TLV of 50 ppm or less.
- Confirm adequate hood performance before use; keep hood closed at all times except when adjustments within the hood are being made; keep materials stored in hoods to a minimum and do not allow them to block vents or air flow.
- Be alert to unsafe conditions and see that they are corrected when detected.
- Do not discharge to the sewer concentrated acids or bases; highly toxic, malodorous, or lachrymatory substances; or any substances which might interfere with the biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage or obstruct flow.
- Avoid working alone in the laboratory, chemical storage or prep areas. If you must work alone, let someone else know and have them periodically check on you.
- Flammable liquids require special attention. Never use these materials near any source of ignition, spark or open flame.
- Never perform a first-time chemical demonstration in front of your class. Always perform first-time demonstrations in front of other instructors to evaluate the safety of the demonstration.
- Never store chemicals over, under or near a sink.
- Only authorized personnel should be allowed in chemical storeroom.
- Have a fire blanket easily accessible in case of an accident.
- Know the locations for all personal safety and emergency equipment, eye wash, shower, fire extinguisher and spill control materials.
- Train all students on how to use all safety devices in the laboratory (i.e. eyewash, shower, etc.) and teach all students and employees to find the safety devices quickly in an emergency.
- Know appropriate procedure in the event of power failure.
- Know where and how to use master utility to shut off gas, electrical and water supplies.
- Do not smell or taste chemicals.
- Use a safety shield whenever an explosion or implosion might occur or tape glassware to prevent flying glass.
- Read all chemical labels prior to use.
- Know and understand the hazards of the chemical as stated in the SDS and other references.
- Use protective safety equipment to reduce potential exposure, (i.e. gloves, respirators, fume hood, etc.)
- Know how to properly store all chemicals in their compatible chemical families.
- Know proper transportation and disposal procedures for chemicals.
- Know appropriate emergency procedures, waste disposal, spill cleanup, evacuation routes and fire emergency notification.
- Know and understand the personal hygiene practices outlined in the Chemical Hygiene Plan.
- Use hazardous chemicals and all laboratory equipment only as directed or for their intended purpose.
- Inspect equipment, apparatus, personal protective equipment, etc. for integrity or proper functioning before use. Do not use damaged equipment. Malfunctioning laboratory equipment should be labeled or tagged "out of service" so that others will not inadvertently use it before repairs are made. Inform the Coordinator of Instructional Safety and Chemical Hygiene of any malfunctioning equipment.
- Handle and store laboratory glassware with care to avoid damage; do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur. Use equipment only for its designed purpose.
- Ask the Coordinator of Instructional Safety and Chemical Hygiene if you do not understand any rules or procedures.

### 3.2 Personal Hygiene Guidelines

- Remove contaminated clothing and gloves before leaving the laboratory.
- Wash hands before leaving the laboratory.
- Avoid direct contact with any chemical. Keep chemicals off your hands, face, and clothing, including shoes. Never, smell, inhale or taste a chemical. Wash thoroughly with soap and water after handling any chemical.
- Do not eat, drink, or use tobacco or cosmetic products in the laboratory or chemical storeroom.
- Do not bring food, drink, cosmetic or tobacco products into laboratories that chemicals may be used in.

### 3.3 Housekeeping Rules

- Keep floors clean and dry.
- Keep all aisles, hallways, and stairs, and exits free of obstructions.
- Keep all work areas, and especially work benches, clear of clutter.
- All working surfaces should be cleaned regularly.
- Access to emergency equipment, utility controls, showers, eyewashes and exits should never be blocked.
- Wastes and broken glassware should be kept in appropriate containers and labeled properly.
- Any unlabeled container must be labeled if it is not under your direct supervision.
- Do not put paper or solids in sinks.
- Prior to leaving lab for the day benches must be clean, all glassware cleaned and put away, and balance and instrument areas must be clean.

### 3.4 When not to Proceed Without First Reviewing Safety Procedures

Sometimes laboratory workers should not proceed with what seems to be a familiar task. Hazards may exist that are not fully recognized. Certain indicators (procedural changes) should cause the employee to stop and review the safety aspects of their procedure. These indicators include:

- A new procedure, process or test, even if it is very similar to older practices.
- A change or substitution of any of the ingredient chemicals in a procedure.
- A substantial change in the amount of chemicals used (scale up of experimental procedures); usually, one should review safety practices if the volume of chemicals used increases by 200%.
- A failure of any of the equipment used in the process, especially safeguards such as chemical hoods.
- Unexpected experimental results (such as a pressure increase, increased reaction rates, unanticipated byproducts). When an experimental result is different from the predicted, a review of how the new result impacts safety practices should be made.
- Chemical odors, illness in the laboratory staff that may be related to chemical exposure or other indicators of a failure in engineered safeguards.

The occurrence of any of these conditions should cause the laboratory employee to pause, evaluate the safety implications of these changes or results, make changes as necessary and proceed cautiously.

### 3.5 Personal Protective Equipment (PPE) /Clothing

Personal protective devices are to be used only where engineering and administrative controls cannot be used or made adequate, or while controls are being instituted.

Engineering and administrative controls to reduce or eliminate exposures to hazardous chemicals include:

- **substitution** of a less hazardous substance
- **substitution** of less hazardous equipment or process (e.g., safety cans for glass bottles)
- **isolation** of the operator or the process

- **local and general ventilation** (use of fume hoods)
- **hazard education**
- **job rotation**

The SDS will list the personal protective equipment recommended for use with the chemical. The SDS addresses "worst case" conditions. Therefore, not all of the equipment shown may be needed for a specific job.

Personal protective equipment (PPE) should be selected on a task basis, and checked to ensure it is in good condition prior to use. Documented training shall precede the use of respirators. The employer must provide appropriate personal protective equipment to employees.

### 3.5.1 Respirators

If your work requires the use of a respirator, you must receive special training. Do not use respiratory protective equipment until you have received proper training.

Respirators are designed to protect only against specific types of substances and in certain concentration ranges, depending on the type of equipment used. Never use a respirator unless you have been assigned one and have been trained and fit tested.

Respirator selection is based on the hazard and the protection factor required. Respirators shall be selected and used in accordance with the requirements of 29 CFR 1910.134.

Types of respiratory protective equipment include:

- particle-removing air purifying respirators (N95, N100)
- gas and vapor-removing air purifying respirators
- air supplied respirators

You should familiarize yourself with the limitations of each type of respiratory protective equipment used and the signals for respirator failure (odor breakthrough, filter clogging, etc.). Respirators are not to be used except in conjunction with a written respiratory protection program.

### 3.5.2 Eye Protection

Eye and face protection must be worn whenever its use will reduce or eliminate injury. It is mandatory that eye protection be worn in the laboratory whenever chemicals, heat and/or glassware are in use. The need for adequate eye protection is fundamental to the use of chemicals, including housekeeping materials such as wax strippers, detergent and toilet bowl cleaners, and operations such as grinding, drilling, and sawing with power tools. Eye protection, and at times face protection, is required wherever the potential for eye injury exists. Areas where eye protection must be worn are laboratories, jewelry and ceramics, and machine shops or any area where active or automated work with chemicals is conducted. Eye protection is required for all personnel and visitors in these areas. No personnel may enter laboratories where chemicals are being handled or automated processes are in operation without eye protection.

Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion these glasses cannot pass the rigorous test for industrial safety glasses.) Adequate safety glasses must meet the requirements of the standard Practice for Occupational and Educational Eye and Face Protection (ANSI Z.87.1 1989) and must be equipped with side shields.

Safety glasses with side shields do not provide adequate protection from splashes, therefore, when the potential for a splash hazard exists, other eye protection and/or face protection must be worn. Splash goggles (acid goggles) with splash proof sides should be used when protection from a chemical splash is needed. A face shield should be used in conjunction with splash goggles when the face and neck need to be protected as well.

Face shields afford protection to the face and neck. Face shields should be worn if there is an explosion or implosion (pressure or vacuum) hazard and when transferring cryogenic liquids. Special eye protection is available for protection against laser, ultraviolet (UV), welding and brazing, or intense light sources.

Eye protection must be made available to employees when the potential for eye injury exists.

### 3.5.3 Gloves

Before each use, gloves should be checked for integrity. Gloves should be washed prior to removal whenever possible to prevent possible skin contamination.

Disposable nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. These gloves provide a non chemical resistant barrier between the worker's hand and the reagent. Lab workers who contaminate their gloves should immediately remove them, wash their hands and don new gloves. Gloves should not be worn outside of the lab.

The selection of the proper glove requires knowledge of the health and physical hazards of the chemical that is used; familiarity with the glove manufacturer's test data (permeation rate and breakthrough time) and the length of the hand exposure. **(See Appendix A)**

### 3.5.4 Aprons

Chemical resistant aprons are available in various labs. Aprons should not be worn outside of the lab. Shorts and/or sandals should not be worn under an apron.

## 3.6 Personal Contamination and Injury

### General Information

Do what is necessary to protect life. Remain calm. The SDS for the chemical will contain special first aid information.

Do not move an injured person unless they are in further danger. A blanket should be used immediately to protect the victim from shock and exposure. Get medical attention promptly by calling:

- 911
- Poison Information Center 1-800-222-1222

For specific instruction regarding personal contamination, contact your supervisor, instructor, or Coordinator of Instructional Safety and Chemical Hygiene

### Chemicals Spilled Over a Large Area of the Body

Quickly remove all contaminated clothing while using the safety shower or other available source of water. Immediately flood the affected body area in cold water for at least 15 minutes. Wash off chemical with water but do not use neutralizing chemicals, unguents, creams, lotions, or salves. Get medical attention promptly. Quickly brush off solid corrosives **BEFORE** adding water.

### Chemicals on the Skin in Confined Areas

Immediately flush with cold water. If there is no visible burn, scrub area with warm water and soap. Remove all jewelry to facilitate removal of any residual material. If a delayed action is noted (often the next day), report immediately for medical attention and explain carefully what chemicals were involved.

If there is any doubt, seek immediate medical attention.

### Chemicals in the Eyes

Irrigate with plenty of cool water for at least 15 minutes. Simultaneously, check for and remove contact lenses.

### **Smoke and Fumes**

Anyone overcome with smoke or chemical fumes should be removed to uncontaminated air and treated for shock. If applicable, follow standard CPR protocols. Get medical attention promptly.

Do not enter the area if a life threatening condition still exists, such as the presence of:

- oxygen depletion
- explosive vapors
- cyanide gas, hydrogen sulfide
- nitrogen oxides, carbon monoxide

### **Burning Clothing**

Extinguish burning clothing by dousing with cold water or use emergency shower or the drop-and-roll technique. Remove contaminated clothing. If possible, send clothing with the victim. Wrap injured person to prevent shock.

Get medical attention promptly.

### **Ingestion of Hazardous Chemicals**

Identify the chemical ingested and Call 911. If instructed by local emergency personnel (911), call poison control 1-800-222-1222. Wrap injured person to prevent shock.

Provide the ambulance crew and physician the chemical name and any other relevant information. See SDS.

## **3.7 Chemical Spill and Accident Procedures**

### **General Information**

Anticipate spills by having the appropriate safety equipment on hand.

If a spill occurs immediately alert personnel in the area and do what is necessary to protect life. Confine the spill if possible.

Call for assistance if the spill is large; a threat to personnel, students or the public; involves corrosives, highly toxic, or reactive chemicals.

- **911**
- **212-3066 (Maintenance)**

For specific spill cleanup information, contact your supervisor or the Coordinator of Instructional Safety and Chemical Hygiene.

### **Spill Cleanup Supplies**

Spills of chemicals that do not pose a fire, toxic or corrosive hazard, may be cleaned up by the laboratory worker. Use an absorbent material that will neutralize the spill if available. Examples of spill cleanup materials include:

- sand/kitty litter
- sodium bicarbonate for acids
- powdered citric acid for bases
- "Neutrakit" (liquid caustic), "Liquisorb" (liquid absorbent), "Flammable Solvent Spill Kit"
- paper towels

A dustpan and brush should be used and rubber gloves and goggles should be worn during the cleanup. Decontaminate area with soap and water after clean-up. Place residue in a labeled container for waste collection and notify the Coordinator of Instructional Safety and Chemical Hygiene.

Notify all personnel in the area if a flammable, carcinogenic, reactive, toxic, or reproductive hazard is spilled. Extinguish flames and all other sources of ignition (such as brush-type motors.) Maintain fume hood ventilation, vacate the area and call for assistance.

## **Hazardous Spills**

The following compounds are very hazardous. You should not clean them up yourself.

- aromatic amines
- nitro compounds
- bromine
- mercury
- ethers
- carbon disulfide
- hydrazine
- cyanides
- nitriles
- organic halides

If you spill an acutely toxic material, immediately evacuate the area and contact your supervisor or the Coordinator of Instructional Safety and Chemical Hygiene.

Small spills of acids should be absorbed with a clay type absorbent such as kitty litter or acid neutralizer. Avoid contact with skin. Place residue in labeled container for waste collection. For specific cleanup information, contact your supervisor or the Coordinator of Instructional Safety and Chemical Hygiene.

Elemental mercury spills should be handled by the Coordinator of Instructional Safety and Chemical Hygiene which has the proper equipment to cleanup spilled mercury.

Smother alkali metal spills with powdered graphite.

White Phosphorus should be smothered with wet sand or wet absorbent.

## **3.8 Fire and Related Emergencies**

If you discover a fire or fire-related emergency, such as abnormal heating of material, hazardous gas leaks, hazardous material or flammable liquid spill, smoke, or odor of burning, immediately follow these procedures: Activate the building alarm (fire pull station); if not available or operational, verbally notify persons in the building.

Call **911** from a safe location and notify administration.

Isolate the area and evacuate the building:

- Shut down equipment in the immediate area (if possible).
- Close doors to isolate the area.
- Use a portable fire extinguisher to assist oneself or another to evacuate, or control a small fire, if possible. (Never put oneself in harm's way!)

Identify yourself as the person who notified the authorities and provide the fire or police teams with the details of the problem upon their arrival. Special hazard information you may know is essential. If the fire alarms are ringing in your building:

- Evacuate the building.
- Move away from the building to a designated area/rally point.
- Stay clear of driveways, sidewalks and other means of access to the building.

If you are a supervisor account for your employees and report any missing persons to the emergency personnel at the scene. Assist emergency personnel as may be requested.

Do not reenter the building until directed to do so. Follow any special procedures established for your unit.

## **3.9 Electrical Safety**

The hazards associated with the use of electricity include electrical shock and electrical fires caused by shorts and overloaded circuits or wiring. In addition, sparks from electrical equipment can serve as an ignition source

for flammable or explosive vapors or combustible materials. Most incidents are a result of unsafe work practices, improper equipment use, and faulty equipment. Adherence to the following rules and procedures can significantly reduce the electrical hazards one might encounter in the workplace and ensure compliance with OSHA regulations:

- Know the location of electrical panels and disconnect switches in or near your laboratory and/or work area so that power can be quickly shut down in the event of a fire or electrical accident. To enhance safety, post the location of the electrical panel on the equipment it services.
- Never obstruct electrical panels and disconnect switches. These should be clearly labeled to indicate what equipment or power source they control. **A minimum 3-foot clearance must be maintained around electrical panels at all times to permit ready and safe operation and maintenance of such equipment.**
- **Do not overload circuits or wiring.** Overloading can lead to overheated wires and arcing, which can cause fires and electrical shock injuries.
- Inspect all electrical equipment (hot plates, stirrers, ovens, extension cords, etc.) before use to ensure that cords and plugs are in good condition—not worn, twisted, frayed, abraded, corroded, or with exposed wires or missing ground pins. Live parts must be effectively insulated or physically guarded. Equipment with damaged or defective cords or plugs should be taken out of service immediately and repaired by qualified personnel.
- Ensure that all electrical outlets have a grounding connection requiring a three-pronged plug. All electrical equipment should have three-pronged, grounded plugs or be double-insulated.
- Electrical outlets, wiring, and other electrical equipment integral to the building may only be serviced and repaired by Facilities Operations qualified trades personnel or other qualified electricians.
- Work on electrical equipment must be done only after the power has been disconnected. On cord and plug connected equipment, the power cord must be unplugged and under the exclusive control of the person performing the work so that the equipment cannot be accidentally turned on by someone else. On hard-wired equipment, the main disconnect device or circuit breaker must be shut off and locked and tagged with a special padlock and tag. **Service and/or repair work on hard-wired equipment may only be carried out by authorized individuals who have received Lockout/Tagout training.**
- Limit the use of extension cords—they are for temporary, short-term use only. In all other cases, request the installation of a new electrical outlet. Do not use extension cords as substitution for fixed receptacle outlets. **Long-term use of extension cords is a violation of OSHA regulations.** The long-term use of multi-outlet power strips is also illegal, except for use with computer equipment.
- Ensure that all extension cords used are carefully placed, visible, and not subject to damage. Cords must not run across aisles or corridors where they might be damaged or create a tripping hazard. Cords must not run through doors, walls or partitions, under rugs, or above dropped ceilings. They must not be tied in knots, draped overhead, or attached to walls.
- **Ensure that the wire size of an extension cord is adequate for the current to be carried.** Failure to do so can lead to electrical fires. Cords used for 110-120 volt service should be UL listed with a polarized three prong plug. Extension cords must never be linked together—use the proper length extension cord needed for the application.
- Keep corrosive chemicals and organic solvents away from electrical cord—these can easily erode the insulation on wires.
- Keep flammable materials away from electrical equipment.
- Keep electrical equipment away from wet or damp locations or potential water spillage, unless specifically rated for use under such conditions.
- Never handle electrical equipment when hands, feet, or body are wet or perspiring or when standing on a wet floor.
- **In the event of an electrical fire, leave the area, call 911, and pull the nearest fire alarm.** Do not use water on an electrical fire. The appropriate fire extinguisher is labeled “C” or “ABC.” If safe and possible, shut down the main power source.
- In an electrical emergency, if a person received an electrical shock, do not touch the equipment, cord or person. **Call 911 so that the Fire Department can treat the injured person and evaluate the situation.** If safe and possible, shut down the main power source.

## 3.10 Chemical Storage Rules and Procedures

### 3.10.1 General

- Before a substance is received, information on proper handling, storage, and disposal should be known to those who will be involved. No container should be accepted without an adequate identifying label. All chemicals shall be opened in the chemical storeroom by trained personnel.
- When chemicals are hand carried, the container should be placed in an outside container or bucket.
- Keep an updated inventory of all chemicals, their amounts and location.
- Stored chemicals should be examined annually for replacement, deterioration and chemical integrity.
- Establish a separate and secure storage area for chemicals.
- All chemicals should be stored in chemically compatible families.
- Store the minimum amount of chemicals needed.
- Store corrosives in appropriate corrosives cabinets.
- No flammable materials should be stored outside an approved flammables cabinet unless in safety cans.
- Do not store chemicals in a fume hood.
- Avoid storing chemicals on shelves above eye level. Use a safety ladder if needed.
- The storage area and cabinets should be labeled as to identify the hazardous nature of the products stored within.
- Shelving sections should be secured to walls or floor to prevent tipping of entire sections.
- Shelves should be equipped with lips or slip resistant material to prevent containers from rolling off.
- Chemicals should not be stored on the floor except in approved shipping containers.
- Storage area should be ventilated by at least four exchanges of air per hour. Isolate the chemical storage exhaust from the general building ventilation system.
- Never store food in a laboratory refrigerator.
- Store chemicals in a separate, locked, dedicated storeroom.
- Store all poisons in a locked cabinet.
- Only authorized personnel are allowed in the chemical storage area unless under direct supervision.
- Exposure to heat or direct sunlight should be avoided.

### 3.10.2 Labeling

#### General

A label is any written, printed, or graphic material displayed on, or affixed to, containers of chemicals.

Labels or other forms of hazard warnings, such as tags or placards, provide immediate warning of potential danger. They are used to warn of a variety of potential physical hazards, or health hazards.

The Occupational Safety and Health Administration's Hazard Communication Standard establishes minimum labeling requirements for most chemical containers in the workplace. All chemical containers at Flathead Valley Community College shall be labeled according to these OSHA requirements. The container shall be labeled with:

- **The contents of the container (i.e. common name of the chemical). Chemical formulas and structural formulas are not acceptable except for small quantities of stock chemicals or compounds synthesized in the laboratory.**
- **Name and address of the manufacturer.**
- **Physical and health hazards.**
- **Recommended protective equipment.**

Existing labels on new containers of chemicals or containers in storage shall not be removed or defaced.

Employees and students should not work with any chemical from an unlabeled container. However portable containers intended for the immediate use, by the employee or student performing the transfer, do not need to be labeled. This labeling requirement also does not apply to students assigned unknown chemicals for analysis. However, hazard information should be provided with all unlabeled chemicals in student laboratories.

Carefully read all the information on the label. If you do not understand something, contact your supervisor or instructor or the Coordinator of Instructional Safety and Chemical Hygiene for an explanation or request the SDS.

Follow the rule: **IF YOU MAKE IT, YOU LABEL IT!** Minimum labeling requirement for stock chemicals include the name of the chemical, the preparation date, your name or initials.

### 3.10.3 SDS Sheets

Material Safety Data Sheets (MSDS) were replaced by Safety Data Sheets (SDS) due to the implementation of the Globally Harmonized System (GHS). The Globally Harmonized System was developed by the United Nations to be used as a tool for developing international regulations and safety standards. The most noticeable changes in GHS are the pictograms (formerly: hazard symbols) and signal word. Note the hazard symbols (NFPA) are ordered with #4 as the most hazardous and GHS #1 as most hazardous. Old MSDS shall be kept on file for 30 years.

The safety data sheet (SDS) is the hazard communication tool that provides details on all important aspects of chemical use, handling, and storage. Review both the appropriate Standard Operating Procedure and the SDS when working with a chemical for the first time or when training staff. The OSHA Hazard Communication standard (29 CFR 1910.1200) requires manufacturers to provide SDSs at no cost. Information is divided into sixteen sections.

**Section I** of the SDS lists **PRODUCT AND COMPANY IDENTIFICATION**. It includes:

- GHS product identifier
- Other means of identification
- Recommended use of the chemical and restrictions on use
- Supplier's details (including name, address, phone number, etc.)
- Emergency phone number

**Section II** provides **HAZARDS IDENTIFICATION**. It includes:

- GHS classification of the substance/mixture and any regional information
- GHS label elements, including precautionary statements
- Other hazards which do not result in classification

**Section III** describes the **COMPOSITION/INFORMATION ON INGREDIENTS**. It includes:

- Substance
- Chemical identity
- Common name, synonyms, etc.
- CAS number, EC number, etc.
- Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.
- Mixture
- The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cut-off levels.
- Cut-off level for reproductive toxicity, carcinogenicity and category 1 mutagenicity is 0.1%
- Cut-off level for all other hazard classes is 1%

**Section IV** describes **FIRST-AID MEASURES**. It includes:

- Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact and ingestion.
- Most important symptoms/effects, acute and delayed.
- Indication of immediate medical attention and special treatment needed, if necessary.

**Section V** describes **FIRE-FIGHTING MEASURES**. It includes:

- Suitable (and unsuitable) extinguishing media.
- Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).
- Special protective equipment and precautions for fire-fighters.

**Section VI** describes **ACCIDENTAL RELEASE MEASURES** for the steps to be taken in case of an accidental release or spill. The steps normally include information on containment, evacuation procedures, and waste disposal. The statements on the SDS are general; more specific information is available from the appropriate Standard Operating Procedure. It includes:

- Personal precautions, protective equipment and emergency procedures.
- Environmental precautions.
- Methods and materials for containment and cleaning up.

**Section VII** describes **HANDLING AND STORAGE** procedures to be taken with the material. Information may include statements such as: keep container closed; store in a cool, dry, well ventilated area; keep refrigerated; avoid exposure to sunlight. It includes:

- Precautions for safe handling.
- Conditions for safe storage, including any incompatibilities.

**Section VIII** describes **EXPOSURE CONTROLS/PERSONAL PROTECTION** including the protective equipment for the individual who might have to work with the substance. This section normally describes worst case conditions; therefore, the extent to which personal protective equipment is required is task dependent. Always review the appropriate Standard Operating Procedure.

Equipment may include:

- Respiratory equipment
- Ventilation
- Protective gloves
- Eye protection
- Other protective equipment (i.e., special clothing).
- Control parameters (e.g., occupational exposure limit values or biological limit values).
- Appropriate engineering controls.
- Individual protection measures, such as personal protective equipment.

**Section IX** describes **PHYSICAL AND CHEMICAL PROPERTIES** of the material.

Physical properties include:

- Boiling point
- Specific gravity
- Vapor pressure
- Percent volatile
- Vapor density
- Evaporation rate
- Solubility in water
- Appearance and odor
- Chemical family and formula

**Section X** describes **STABILITY AND REACTIVITY**; that is, the material's ability to react and release energy or heat under special conditions or when it comes in contact with certain substances. It includes:

- Chemical stability
- Possibility of hazardous reactions
- Conditions to avoid (e.g., static discharge, shock or vibration)

**Section XI** includes **TOXICOLOGICAL INFORMATION**. It includes:

- Acute effects
- Chronic effects
- Target organs

**Section XII** describes **ECOLOGICAL INFORMATION**. How the product can affect the environment (ecotoxicity).

**Section XIII** describes **DISPOSAL CONSIDERATIONS**. How to safely dispose of the product.

**Section XIV** includes **TRANSPORT INFORMATION** for land or air transportation.

- For land transportation the U.S. Department of Transportation (DOT) information: ID number, Hazard Class, etc. are listed.
- For air transportation, the International Air Transportation Association (IATA) or International Civil Aviation Organization (ICAO) information is given: ID number, Hazard Class, etc.

**Section XV** includes **REGULATORY INFORMATION** listing any US and worldwide regulations that may be applicable to the product.

**Section XVI** describes **OTHER INFORMATION** which may include any special precautions or miscellaneous information regarding the material. In some cases, manufacturers may choose to withhold certain information on a SDS provided the information is trade secret. Regardless of the existence of trade secrets, the SDS must still contain all relevant hazard, protection, and health information.

Some SDSs may not contain all sections or the information may be in a slightly different order. However, the basic information described above must be provided. Some SDSs are more complete than others. Do not assume everything you need to know is contained on the SDS. Do not assume if a section is left blank that there is no risk.

### 3.11 Hazardous Chemicals

**Hazardous chemical** means a chemical 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. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems and agents which damage the lungs, skin, eyes, or mucous membranes.

**Acute exposure** refers to an intense exposure over a relatively short period of time.

**Chronic exposure** refers to a prolonged exposure occurring over a period of days, weeks or years.

#### Routes of Entry into the Body

Route of exposure describes the way the chemical enters the body. Chemicals may have serious effects by one route, and minimal effects by another. Hazardous chemicals may enter the body by:

- **Inhalation** - absorption through the respiratory tract
- **Absorption** through the skin via dermal contact
- **Ingestion** - absorption through the digestive tract - (Ingestion can occur through eating or smoking with contaminated hands or in contaminated work areas)
- **Injection** - Introducing the material directly into the bloodstream - (Injection may occur through mechanical injury from "sharps")

In the laboratory the primary routes of chemical exposure is through inhalation and dermal contact. Working in a laboratory with good general ventilation and using a chemical fume hood can prevent inhalation exposures. Wearing appropriate chemical protective clothing prevents dermal contact. Good hygiene habits, such as regular washing your hands, and using tongs or other tools to pick up sharp objects, will prevent exposure through ingestion or injection.

### 3.11.1 Chemical Toxicology & Symptoms

Some symptoms of chemical toxic exposure include:

- irritation, coughing, choking, tight chest, shortness of breath
- nausea, vomiting, diarrhea
- back pain, urinating more or less than usual
- headache, dizziness, behavior confusion, depression, coma, convulsions
- anemia (tiredness, weakness)
- rashes, itching, redness, swelling or burning sensation
- infertility, miscarriage

### 3.11.2 Permissible Exposure Limits (PEL); Threshold Limit Value (TLV)

#### Permissible Exposure Limits (PEL)

OSHA sets enforceable permissible exposure limits (PELs) to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. They may also contain a skin designation.

PEL may be either a time-weighted-average (TWA) exposure limit (8 hour), a 15 minute short term exposure limit (STEL), or a ceiling (C).

#### Threshold Limit Value (TLV)

TLVs are airborne concentrations of substances devised by the ACGIH that represents conditions under which it is believed that nearly all workers may be exposed day after day, with no adverse effect. TLVs are advisory exposure guidelines, not legal standards, which are based on evidence from industrial experience, animal studies, or human studies when they exist.

TLV may be either a time-weighted-average (TWA) exposure limit (8 hour), a 15 minute short term exposure limit (STEL), or a ceiling (C).

### 3.11.3 Toxic Chemicals

- Poisons
- Carcinogens
- Teratogens/Reproductive Hazards
- Heavy Metals
- Mutagens

Generally, when the volatile chemical has a threshold limit value, TLV, or permissible exposure limit, PEL, of 50ppm or less an approved fume hood should be used.

### 3.11.4 Flammable Chemicals

In general, the flammability of a chemical is determined by its **flash point**, the lowest temperature at which a liquid gives off enough vapor to form an ignitable mixture and burn when a source of ignition (sparks, open flames, cigarettes, etc.) is present.

According to the DOT and NFPA, a **flammable liquid** is one that has a flash point below 100°F (37.8°C).

A flammable substance can fall into one of the following categories:

- Aerosol
- Gas
- Liquid
- Solid

An **ignitable substance** is a solid, liquid, or compressed gas that has a flash point of less than 140°F

A **combustible liquid** is defined by the DOT and NFPA, as any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), or liquids that will burn. They do not ignite as easily as flammable liquids. However, combustible liquids can be ignited under certain circumstances, and must be handled with caution. Substances, such as wood, paper, etc., are termed "Ordinary Combustibles".

**Explosive** means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Some flammable chemicals include organic solvents, alcohols and acetone.

Flammables must be stored in flammable cabinets. Vapors of flammable liquids are heavier than air and can travel along bench tops and down drain troughs. Keep sources of ignition away from any flammables and use adequate ventilation. Have a fire extinguisher in the near vicinity when using flammables.

### 3.11.5 Reactive Chemicals

Reactivity is a substance's susceptibility to undergoing a chemical reaction or change that may result in dangerous side effects such as explosion, burning, and corrosive or toxic emissions. The conditions that cause the reaction, such as heat, other chemicals and dropping, will usually be specified as "Conditions to Avoid" when a chemical's reactivity is discussed on a SDS.

Some reactive chemicals include organic peroxides, ethers, oxidizers, explosives and water reactive and air sensitive materials. The user should be familiar with the SDS before using the reactive substance. Disposal of reactive chemicals generally requires prior treatment to render the chemical less hazardous. Inform the Coordinator of Instructional Safety and Chemical Hygiene before disposing of reactive chemicals.

Ethers are particularly prone to forming explosive peroxides and should have a shelf life of no more than one year.

### 3.11.6 Corrosive Chemicals

A corrosive chemical, as defined by DOT, is a substance that causes visible destruction or permanent changes in human skin tissue at the site of contact or is highly corrosive to steel.

Corrosive chemicals include strong acids and bases. Corrosive chemicals can be irritants and allergic sensitizers. Personal protective equipment **MUST** be used when working with corrosive substances to protect skin, eyes and the respiratory tract from vapors. Always add corrosives to water to prevent overheating and spattering. Spills must be cleaned up immediately. Corrosive chemicals shall be neutralized before disposal. Corrosives must be stored in corrosive cabinets, separating acids from bases.

### 3.11.7 Compressed Gases

Compressed gas cylinders can be extremely hazardous when misused or abused. Compressed gas cylinders can present a variety of hazards due to their pressure and/or content. Without proper use and care compressed gas cylinders can explode or become flying projectiles when cylinder valves are damaged or broken off.

All gas cylinders at Flathead Valley Community College must:

- Be equipped with the correct regulator
- Secured at all times with appropriate chain or strap
- Segregated in hazard classes while in storage
- Oxygen separated from flammable gases
- Empty cylinders isolated from filled cylinders
- Protective cap on cylinder when being transported

### 3.11.8 Regulated Chemicals and Particularly Hazardous Chemicals

Particularly hazardous substances are defined to include select carcinogens, reproductive toxins and substances that have a high degree of acute toxicity (such as cyanides and dimethyl mercury).

Select carcinogens include any substance that is included on any of the following lists of carcinogens:

- **OSHA Carcinogen List**
- **Annual Report on Carcinogens** published by the National Toxicology Program (NTP), including all of the substances listed as "known to be carcinogens" and some substances listed as "reasonably anticipated to be carcinogens"
- **International Agency for Research on Cancer (IARC)**, including all of Group 1 "carcinogen to humans" and some in Group 2A or 2B, "reasonably anticipated to be carcinogens"
- **Reproductive toxin** includes any chemical that may affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

Some more common particularly hazardous chemicals include:

- Bromine
- Arsenic, Cadmium, Chromium, Lead compounds
- Carbon tetrachloride
- Chloroform
- Formaldehyde
- Mercury
- Silica
- Thiourea

Consult the product SDS for assistance in determining whether a substance is classified as particularly hazardous.

## 3.12 Chemical Waste Disposal Program

### General Information, Responsibility and Liability

The Resource Conservation and Recovery Act (RCRA) establishes a "cradle to grave" hazardous waste management system, which is administered by the U.S. Environmental Protection Agency (EPA). This system provides for managing, tracking, and regulating wastes at each step of the way, from generation to final disposal. The regulations by the EPA apply to those who generate, transport, treat, and dispose of hazardous wastes. The Montana Department of Environmental Quality (MDEQ) is authorized to administer its own hazardous waste requirements within the state. It is the responsibility of each person on campus, generating hazardous waste to fully understand and comply with Flathead Valley Community College's Hazardous Waste Management Program.

#### 3.12.1 General

A general guide when using chemicals is to reduce, reuse and recycle. Each laboratory employee should contact the Coordinator of Instructional Safety and Chemical Hygiene to find out how to dispose of particular chemicals in their lab. Many chemicals are safe to dispose of through the sewer system but hazardous chemicals should **NEVER** be disposed of down the drain. Some chemicals can be discharged to the sewer system **ONLY** after pretreatment.

#### 3.12.2 Hazardous Waste

Flathead Valley Community College is classified as a conditionally exempt generator (CEG) which produces less than 220 pounds of nonacute hazardous waste within any calendar month or no more than 2.2 pounds of acute hazardous waste in any month. The Montana Department of Environmental Quality (MDEQ) lists the requirements for CEG as:

- Determine which generated wastes are hazardous
- Keep records of waste analysis for three years
- Dispose hazardous waste only at a legitimate recycling facility, a permitted TSD or a Class II landfill
- May treat, recycle or reclaim waste onsite

Flathead Valley Community College is dedicated to disposing of chemicals in a safe and environmentally conscious way. Hazardous waste materials shall be given to the Coordinator of Instructional Safety and Chemical Hygiene for proper disposal. Each employee wishing to discard hazardous waste will fill out a **FVCC Chemical Disposal** form and contact the Coordinator of Instructional Safety and Chemical Hygiene. The Coordinator of Instructional Safety and Chemical Hygiene will be responsible for proper disposal of the hazardous substance either through proper pretreatment methods, to render the substance non-hazardous, or by means of licensed environmental hazardous waste disposal facilities.

Used oil and universal wastes shall be managed by the FVCC Maintenance Supervisor.

### **3.12.3 Biological, Pathological and Medical Waste Management**

Some departments at Flathead Valley Community College produce biological, pathological or medical waste. These departments include Nursing, Medical Technician, Paramedic, Microbiology and Anatomy and Physiology. Custodians also face clean up of bodily fluids from time to time. Certain protocols must be followed to safely dispose of biological or bloodborne pathogens and sharps.

The following procedures will be followed for biological, pathological and medical waste disposal.

#### **Sharps**

- All sharps, including but not limited to needles, syringe, lancets and blades, shall be disposed of in one time use sharps containers
- When a sharps container is full it shall be placed in a bio-hazard waste container in BC 109

#### **Red Biohazard Bags**

- Biohazards such as blood or bodily fluids cleaned up by the custodial staff shall be placed in a red biohazard bag
- All biohazard bags shall be placed in a bio-hazard waste container in BC 109

#### **Medical Waste**

- All medical waste shall be placed in red biohazard bags
- All biohazard bags shall be placed in a bio-hazard waste container in BC 109

#### **Biological Waste**

- All biological waste that presents a biohazard to people or the environment shall be placed in biohazard autoclave bags and autoclaved at 121C @ 15 psi for one hour
- After treatment the waste is considered non-hazardous waste and can be disposed of in an appropriate manner

### **3.13 Laboratory Facility**

Each laboratory facility at Flathead Valley Community College should have the following:

- An appropriate general ventilation system with air intakes and exhausts located so as to avoid intake of contaminated air
- Adequate, well-ventilated stockrooms/storerooms
- Laboratory hoods and sinks where applicable
- Safety equipment including eyewash fountains and drench showers where applicable
- Arrangements for waste disposal

### **3.14 Room Signs**

Prominent signs and labels of the following types should be posted:

- Emergency telephone numbers of emergency personnel/facilities
- Location signs for safety showers, eyewash stations, other safety and first aid equipment
- Warnings at areas or equipment where special or unusual hazards exist

### **3.15 Safety Equipment Inspection**

Fume hoods, eyewashes and safety shower/drenches, fire extinguishers and other safety equipment shall be inspected on a routine basis. The Coordinator of Instructional Safety and Chemical Hygiene will inspect laboratory safety equipment and maintain records of inspections for three years.. Fire extinguishers shall be inspected by FVCC Facilities Maintenance personnel who shall maintain inspection and service records..

### **3.16 Recordkeeping**

- Accident records should be written and retained
- Chemical Hygiene Plan records should document that the facilities and precautions were compatible with current knowledge and regulations
- Medical records should be retained by the institution in accordance with the requirements of state and federal regulations

The employer shall assure that such records are kept, transferred, and made available in accordance with 29 CFR 1910.1020

## **4.0 Employee Training and Information**

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

Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The frequency of refresher information and training shall be determined by the employer.

Employees shall be informed of:

- The contents of this standard OSHA 1910.1450 and its appendices which shall be made available to employees
- the location and availability of the employer's Chemical Hygiene Plan
- The permissible exposure limits for OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard
- Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory
- The location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including, but not limited to, Material Safety Data Sheets received from the chemical supplier.

Employee training shall include:

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

- The employee shall be trained on the applicable details of the employer's written Chemical Hygiene Plan

#### **4.1 Notice to Employees**

Flathead Valley Community College is required to advise you of your rights regarding the Hazard Communication Standard, Personal Protective Equipment Standard and Occupational Exposure to Hazardous Chemicals in the Laboratory. This manual meets these requirements in part. In addition, a standard Montana Safety and Health Poster, "Notice to Employee", will be posted at locations where notices are normally posted. It is to your advantage to know your rights. Take time to read the "Notice to Employee" form posted in your work area.

#### **Employee Rights**

Employees who may be exposed to hazardous chemicals have access to the following information where appropriate:

- chemical exposure information
- workplace chemical lists
- material safety data sheets

In addition, employees and students shall receive training on the hazards of chemicals and on the measures they can take to protect themselves from those hazards.

You have the right to file a complaint against FVCC regarding alleged violations of the Hazard Communication Standard or Chemical Hygiene Plan. If you file a complaint, the Act protects you from:

- discharge
- cause for discharge
- discipline
- discrimination
- loss of pay, position, seniority or benefits

Alleged violations of the OSHA standard should be referred to your supervisor, instructor, or the Flathead Valley Community College Safety Committee. However, you always have the right to file a complaint with the Occupational Safety and Health Administration (OSHA).

#### **Protective Equipment**

The employer must assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment. The Coordinator of Instructional Safety and Chemical Hygiene fulfills this responsibility by completing a Safety Audit annually.

The Laboratory Supervisor is responsible to select and provide employees with routine personal protective equipment appropriate for laboratory work (e.g. disposable gloves, safety glasses, face shields and other similar items). Students may be required to purchase common items such as laboratory aprons or dust masks or eye protection. The Coordinator of Instructional Safety and Chemical Hygiene will select non routine personal protective equipment such as respirators, chemical protective gloves, and chemical protective clothing.

Laboratory Supervisors shall assure that training in the use of routine laboratory personal protective equipment is provided. The Coordinator of Instructional Safety and Chemical Hygiene will provide training in the use of non routine personnel protective equipment.

#### **Training Programs**

Flathead Valley Community College will provide a training program for employees using or handling chemicals. Additional instruction is required whenever the potential for exposure to hazardous chemicals is altered or whenever new information concerning a chemical is received. New or newly assigned employees must be provided training before working with, or in a work area containing hazardous chemicals. For students, training may be required for each course. Training programs shall include, as appropriate, the following:

- interpreting labels and SDSs
- location of hazardous chemicals
- a description of the acute and chronic effects of chemicals
- safe handling procedures
- personal protective equipment
- cleanup procedures
- waste disposal

In an area or laboratory where a large variety of hazardous chemicals are stored or used, Flathead Valley Community College may substitute generic training for chemical specific training. The contents of this manual meet the requirements of 29 CFR 1910.1200, Hazard Communication Standard and 29 CFR 1910.1450, the Chemical Hygiene Plan.

Flathead Valley Community College is required to keep a record of training sessions provided to employees. You may be requested to sign a contract or attendance list to verify your attendance at a training session. If you do not understand the material provided or discussed, contact your supervisor or the Coordinator of Instructional Safety and Chemical Hygiene.

## 5.0 Chemical Exposure Assessment

The employer shall measure the employee's exposure to any substance regulated by a standard which requires monitoring if there is reason to believe that exposure levels for that substance routinely exceed the action level (or in the absence of an action level, the PEL).

If the initial monitoring discloses employee exposure over the action level (or in the absence of an action level, the PEL), the employer shall immediately comply with the exposure monitoring provisions of the relevant standard.

Monitoring may be terminated in accordance with the relevant standard.

The employer shall, within 15 working days after the receipt of any monitoring results, notify the employee of these results in writing either individually or by posting results in an appropriate location that is accessible to employees.

## 6.0 Medical Evaluations

**Medical consultation** means a consultation which takes place between an employee and a licensed physician for the purpose of determining what medical examinations or procedures, if any, are appropriate in cases where a significant exposure to a hazardous chemical may have taken place.

The employer shall 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:

- Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory, the employee shall be provided an opportunity to receive an appropriate medical examination.
- Where exposure monitoring reveals an exposure level routinely above the action level (or in the absence of an action level, the PEL) for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements, medical surveillance shall be established for the affected employee as prescribed by the particular standard.
- 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 shall be provided an opportunity for a medical consultation. Such consultation shall be for the purpose of determining the need for a medical examination.

- All medical examinations and consultations shall be performed by or under the direct supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place.

The employer shall provide the following information to the physician:

- The identity of the hazardous chemical(s) to which the employee may have been exposed
- A description of the conditions under which the exposure occurred including quantitative exposure data, if available
- A description of the signs and symptoms of exposure that the employee is experiencing, if any

For examination or consultation required under this standard, the employer shall obtain a written opinion from the examining physician which shall include the following:

- Any recommendation for further medical follow-up
- The results of the medical examination and any associated tests
- 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
- 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

The written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure.

## 7.0 Monitoring

The employer shall establish and maintain for each employee an accurate record of any measurements taken to monitor employee exposures and any medical consultation and examinations including tests or written opinions required by this standard.

## 8.0 Emergency Action Plan

### Flathead Valley Community College

#### Emergency Action Plan Procedures

Emergency Coordinator – Calvin Pippen –471-8700

Campus Resource Officer – 407-1558

#### Emergency Phone Numbers

##### Classroom Phones (located next to door)

911 - anytime

##### Building Courtesy Phones (located in hallways) (direct dial)

911

270-4555 (campus incident line – evenings and weekends)

#### Emergency Call Order

1. 911
2. 212-3066 (Campus Emergency Notification – evenings and weekends)

#### Emergency Call Procedures

- Give name
- Describe nature and severity of emergency
- Give campus location
- Stay on line with dispatcher until emergency personnel arrive
- Have someone “flag down” emergency personnel at nearest entrance

### Fire Alarm Locations

- Pull down fire alarms located on wall at all building entrance/exit locations

### Primary & Secondary Exit Routes

- Posted in room next to door

### Evacuation Procedures

- Never assume a warning is just a drill
- Immediately leave building through nearest available exit (see exit routes)
- Make sure area has been evacuated and close door (lock and turn off lights if possible ) – **Never put self in harm's way**
- Ask how you might assist individuals with disabilities
- Go to designated rally point
  - Arboretum (behind Blake Hall)
  - Parking Lot between Hwy 93 and LRC Building
- Must move a minimum of 300 feet from affected buildings
- Return to building **ONLY** when authorized by emergency personnel

### Lock Down Procedure

- Stay calm
- Lock door
- Turn off lights
- Keep students down on floor and away from doors and windows in a corner where they will not be seen
- Remain in area until advise by emergency personnel

### Fire

- Before opening door, place palm of hand against it
  - **IF HOT**, exit through window if possible or block door with clothing, etc. to keep out smoke
  - **IF COOL**, open door slowly and check for smoke
  - Stay near floor to avoid smoke and heat
  - Close doors on way out (lock and turn off lights if possible ) – **Never put self in harm's way**

### Explosion

- Follow evacuation procedures (be aware of fire)

### Bomb Threat

- Immediately alert someone else to call 911
- Stay on line with caller – don't hang up even if they do
- Try to glean as much information as possible

### Hazardous Material Release

- **Evacuation**
  - Follow procedure
- **Remain in Building**
  - Close and seal all exterior doors and windows
  - Remain in building until advised by emergency personnel
- **Witness to Spill**
  - Call 911 and 212-3066
  - Vacate affected area and seal off
  - Anyone contaminated by spill should avoid contact with others

### Earthquake

- **Indoors**
  - Seek refuge under desk or table
  - Stay away from glass, shelves and heavy equipment

- **Outdoors**
  - Move quickly away from buildings, utility poles and other structures
- **Automobiles**
  - Stop in safest place available
  - Stay in vehicle

**REMINDERS –**

- **Stay calm**
- **Never put self in harm's way – if in doubt, LEAVE IMMEDIATELY**
- **Only those with training may use fire extinguishers**

## GLOVE TYPE SELECTION GUIDE

CHEMICAL FAMILY	BUTYL RUBBER	NEOPRENE	PVC (VINYL)	NITRILE	NATURAL LATEX
Acetates	G	NR	NR	NR	NR
Acids, inorganic	G	E	E	E	E
Acids, organic	E	E	E	E	E
Acetonitrile, Acrylonitrile	G	E	G	S	E
Alcohols	E	E	NR	E	E
Aldehydes	E	G	NR	S*	NR
Amines	S	NR	NR	F	NR
Bases, inorganic	E	E	E	E	E
Ethers	G	F	NR	E	NR
Halogens (liquids)	G	NR	F	E	NR
Inks	G	E	E	S	F
Ketones	E	G	NR	NR	G
Nitro compounds (Nitrobenzene, Nitromethane)	G	NR	NR	NR	NR
Oleic Acid	E	E	F	E	NR
Phenols	E	E	NR	NR	G
Quinones	NR	E	G	E	E
Solvents, Aliphatic	NR	NR	F	G	NR
Solvents, Aromatic	NR	NR	F	F	NR

*\*Not recommended for Acetaldehyde, use Butyl Rubber*

*S - Superior E - Excellent G - Good F - Fair NR - Not Recommended*

### COMPARISON CHART -- EYE PROTECTION DEVICES

TYPE	FRONT SPLASH Protection	SIDE SPLASH Protection	FRONT FLYING OBJECT IMPACT Protection	SIDE IMPACT Protection	NECK, FACE Protection	COMFORT TO WEARER	USER ACCEPTANCE	USE LIFETIME	COST
Goggles	Excellent	Excellent	Excellent	Excellent	Poor	Fair	Poor	Fair	Moderate
Glasses (no shields)	Good	Poor	Excellent	Poor	Poor	Good to very good	Very good	Very good	Moderate
Glasses (shields)	Good	Good	Good	Fair	Poor	Good	Good	Very good	Moderate
Face shield (various sizes)	Excellent	Good to excellent	Excellent (if adequate thickness)	Good to excellent	Depends on type and length	Fair	Good for short periods	Fair	Moderate (depending on type)

**SOURCE:** ANSI Z87.1(1989) Occupational and Educational Eye and Face Protection, available from American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018