

CHEMICAL HYGIENE PLAN
FOR
COLLEGE OF THE CANYONS

June 26, 2014

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INTRODUCTION

The purpose of College of the Canyon's Chemical Hygiene Plan (CHP) is to perform safely all aspects of laboratory based work; properly remove all hazardous materials or hazardous waste in an environmentally responsible manner; instruct competent safety and hygiene practices; and provide a fulfilling academic laboratory experience.

The CHP was developed to provide general laboratory safety guidelines to avoid and minimize personnel exposures to hazardous materials. The CHP meets the "Occupational Exposure to Hazardous Chemicals in Laboratories" standard, California Code of Regulations, Title 8, Section 5191; California Code of Regulations, Title 8, Sections 5139, 5154.1, 5155 & 5194 and OSHA 29 CFR 1910.1450. All faculty, staff, and students working in a laboratory at College of the Canyons are expected to follow this plan and other specific policies developed for their respective laboratories.

This standard will work in conjunction with Hazard Communication for all California employers engaged in the laboratory use of hazardous chemicals. The regulation shall apply only to those chemicals, which meet the definition of laboratory use (see Appendix A). Chemicals or hazardous substances, which do not meet the definition of laboratory use even if they are used in a laboratory, will be regulated under the Hazard Communication standard.

Based on the definitions of laboratory, laboratory use, and laboratory scale (see Appendix A) and as identified by Cal OSHA, College of the Canyons has identified the following as areas at both campuses that will be included under the Chemical Hygiene Plan:

- Biological Sciences
- Chemistry
- Physical Sciences
- Environmental Sciences

POLICY

The Santa Clarita Community College District is committed to providing a safe and healthful workplace for all laboratory occupants. To fulfill its obligation, the District will incorporate a formal Chemical Hygiene Plan as part of an overall Injury & Illness Prevention Program. The District's Board Policy on Safety and the Management pledge to support this plan, to assure that it remains a viable method of protecting all laboratory occupants.

Supervisors and Managers will use all disciplinary procedures available to them to ensure that personnel follow established safety policies and procedures. Performance evaluations, verbal counseling, written warnings, and other forms of disciplinary action are available.

The Chemical Hygiene Plan has been designed with major emphasis on the health and safety of all District laboratory occupants, with the following considerations:

- The Plan is designed to protect laboratory occupants from the health hazards associated with the hazardous chemicals in each laboratory.

- The Plan is designed to keep exposures below the Permissible Exposure Limits and/or Action Levels as identified in Title 8, Section 5155.
- The Plan remains viable and effective.
- The Plan promotes health and safety, while striving to meet the educational goals of the District, departments, and instructors.
- The Plan enables the District to meet compliance with state, federal, and local regulations as regards to hazardous substances.

All District administrators, managers, employees, and laboratory occupants will be required to adhere to the policies and procedures set forth under this Plan. The District encourages all personnel affected by this Plan to provide constructive criticism to ensure the Plan remains viable and effective, while meeting its intended goals.

PLAN AVAILABILITY

The Chemical Hygiene Plan will be readily available to all District laboratory employees covered under this Plan and identified in the introduction. The Plan will also be readily available when requested by authorized employee representatives and the California Division of Occupational Safety and Health. Copies of this Plan will be distributed to all employees working in Biological Science and Chemistry Labs, and distribution will be coordinated by the Chemical Hygiene Officer. Copies of the plan will be kept in the Biological Science, Chemistry, Physical Science, and Environmental Science Departments, Division Dean's Office, Administration, Facilities Planning and Management, Human Resources, Campus Safety, and the office of the Vice President of Instruction.

PLAN REVIEW

The Chemical Hygiene Officer (CHO) will review the Plan within 12 months of implementation, then annually thereafter. The annual review will be conducted by the CHO. The Plan review is to determine whether or not all aspects of the Plan are still viable and effective.

CHEMICAL HYGIENE RESPONSIBLE PERSONNEL

CHEMICAL HYGIENE OFFICER (CHO)

The Chemical Hygiene Officer is responsible for implementation of the Plan as described in this document. The District hereby assigns:

Name: Omar Torres **Title:** Division Dean, Mathematics, Sciences & Engineering

to the position of Chemical Hygiene Officer. The Chemical Hygiene Officer will work closely with the appropriate instructional administrator to ensure proper implementation of the Chemical Hygiene Plan.

The District offers its full support to the Chemical Hygiene Officer, respective instructional administrator, and pledges to provide Chemical Hygiene personnel with the time and resources necessary to fulfill their responsibilities. The Chemical Hygiene Officer is an employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan along with the appropriate instructional administration. This definition is not intended to place limitations on the position description or job classification that the designated individual shall hold within the District's organizational structure.

LABORATORY FACULTY AND STAFF

Laboratory faculty and staff are responsible for safely supervising experiments or analyses conducted under their purview at all times and that all aspects of the Chemical Hygiene Plan are adhered to. In addition, all personnel working under laboratory faculty and staff supervision are informed of the location and proper use of all emergency equipment such as emergency eyewash/showers and specific safety rules and requirements of the Chemical Hygiene Plan. Laboratory Faculty and Staff will not be allowed to work outside regular College operating hours conducting experiments or analyses.

LABORATORY WORKER AND STUDENT

It is the responsibility of each laboratory worker and student to abide by the general safety guidelines set forth in the Chemical Hygiene Plan as instructed by the Laboratory Faculty and Staff, as well as specific procedures and requirements within their laboratory. Laboratory workers and students must be instructed by the Laboratory Faculty and Staff to the location and proper use of all emergency equipment, routes of egress and specific safety rules and requirements of the Chemical Hygiene Plan. In addition, laboratory workers and students are not allowed individually to be conducting experiments or analyses within any laboratory unless supervised by an authorized laboratory faculty or staff individual. Laboratory workers, students or visitors can be removed from the laboratory whenever Chemical Hygiene Plan general safety guidelines are not followed since unsafe actions may affect the safety of others within the laboratory.

PLAN CONTENTS/REGULATORY REQUIREMENTS

College of the Canyons has developed a written Chemical Hygiene Plan to comply with State and local regulations and as a tool to protect employees from health hazards associated with hazardous chemicals in the laboratory. The District's plan is designed to keep exposures below permissible limits and to protect employees and students from health hazards associated with hazardous chemicals in the laboratories.

- ◆ Standard operating procedures relevant to safety & health when working with chemicals in the lab are located in Section I and have been developed to ensure a safe workplace.
- ◆ Measures to be taken to ensure that emergency equipment and fume hoods function properly and perform adequately can be found in Section I.
- ◆ Criteria to be used to determine and implement control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of personal protective equipment and hygiene practices can be found in Section II.
- ◆ Requirements for prior approval from the employer or designee before implementation of particular laboratory operation can be found in Section III. This section covers control measures for extremely hazardous substances.
- ◆ To ensure employees have an adequate opportunity to receive medical attention, including medical consultation and/or medical examinations, the District has implemented procedures to allow employees to seek medical consultations & medical examinations. These procedures can be found in Section V.
- ◆ The District will make available an information and training program to all laboratory employees. The goal of this program is to ensure that all laboratory personnel are adequately informed about laboratory work, the hazards of chemicals present in the laboratory, and what to do if an incident occurs. Specific details regarding the contents of the information and training program can be found in Section VI.

RECORDKEEPING

Recordkeeping will include the following:

1. Records of changes to the Chemical Hygiene Plan in the form of Safety Committee Minutes and the actual written Chemical Hygiene Plan
2. Records of health and safety training for employees working in the laboratory. These records will be kept in the Chemical Hygiene Officers office
3. Records of the annual general laboratory safety inspections
4. Records of the monthly testing of the emergency eyewashes and showers
5. Records of the annual fume hood surveys (additional surveys may be conducted on a more frequent basis as directed by the Chemical Hygiene Officer)

These records will be maintained for at least 5 years by the Chemical Hygiene Office and a copy sent to Administration.

INSPECTIONS

College of the Canyons has implemented the following inspections based on regulatory requirements. Below is a list of the required inspections and frequency to be performed by the Laboratory Technician:

1. Emergency Eyewash and Deluge Shower testing/activation will be performed monthly to ensure proper operation. CCR Title 8; Section 5162 (e)
2. Fume Hood ventilation rate surveys will be conducted at least annually by an external hood service provider selected by the College. CCR Title 8; Section 5143 (a) (5).
3. General laboratory safety/housekeeping inspections will be performed annually.
4. Inspections of personal protective equipment will be conducted on a regular basis.

SECTION I

STANDARD OPERATING PROCEDURES FOR WORKING WITH LABORATORY CHEMICALS

General Laboratory Guidelines

- Faculty and staff should avoid working alone in the laboratory when conducting experiments or procedures involving hazardous materials. Students are prohibited from working alone.
- Smoking, eating, drinking, gum chewing, the application of cosmetics and contact lens insertion or removal is not permitted in the laboratory preparation areas or areas where chemicals are used or stored (including all instrumentation rooms).
- Food or drink for human consumption is not permitted to be stored in the laboratory areas.
- Mouth pipetting or mouth siphoning is prohibited.

Personal Hygiene and Conduct

- Wash hands frequently with soap and water to minimize chemical exposure via ingestion and skin contact or dermal absorption before and after laboratory procedures.
- Confine long hair and loose clothing. No loose jewelry.
- Avoid inappropriate behavior which might startle or distract another lab worker.
- Immediately report dangerous activities or situations and unsafe conditions or unsafe behavior.
- Immediately report any accidents, exposure incidents or near miss incidents to lab faculty or staff.
- If unsure of the experiment or lab procedure, ask questions and consult with responsible faculty or staff.

Standard Lab Personnel Attire and Personal Protective Equipment

- Clothing should be worn that will minimize exposed skin surfaces. Avoid short sleeved shirts, tank tops, skirts or shorts.
- Closed toe and closed heel shoes are required. Personnel wearing flip flops and sandals will not be allowed into any laboratory. Faculty, staff, and students should not be allowed to conduct experiments or procedures when wearing flip flops and sandals.
- **Standard personal protective equipment (PPE) for all personnel working with hazardous chemicals, at a minimum, is: eye protection and disposable gloves.**
- Only safety glasses or goggles that meet the current American National Standards Institute (ANSI) safety standards should be worn when handling chemicals to avoid eye contact. When necessary, use a face shield with splash goggles to prevent eye and face exposures to corrosives.
- Wear an apron over clothing when working with hazardous chemicals that could cause serious injury from splashing chemicals upon skin contact.
- Wear appropriate heavy chemical resistant gloves over disposable gloves when handling hazardous chemicals that are corrosive upon skin contact (Consult faculty or staff and the Material/Safety Data Sheets).
- Remove gloves when leaving the laboratory or when using computers to prevent contamination

(doorknobs, surfaces...etc).

- Clean glassware and return to storage promptly. Clutter near sinks, aisles and egresses invite accidents. Follow good housekeeping practices.

General Housekeeping

- Keep work areas clean and uncluttered.
- Clean work areas and return equipment and supplies to proper storage areas at the end of each lab session or class.
- All broken glass should be immediately disposed of in the broken glass containers provided.
- Do not ignore wet floors – immediately dry to prevent slips and falls.
- Use properly labeled hazardous waste containers and follow established hazardous waste procedures.
- Keep aisles, walking areas emergency eyewash/showers and egresses free of clutter (carts, containers, backpack...etc.) Routes of egress (including those within the department work area) must remain open and clutter free at all times.
- Do not clutter work area with unnecessary supplies. Store supplies in their proper location.

Laboratory Equipment and Glassware

- Laboratory equipment should be used for only its intended purpose.
- All lab faculty, staff, and students shall receive training and learn how to use the equipment prior to conducting lab procedures or experiments.
- Emergency equipment will be inspected periodically.
- Do not use damaged equipment; immediately tag for repair and notify faculty or staff of faulty equipment.
- Do not use damaged glassware. Always inspect glassware for damage or cracks prior to use.
- Broken glass should be disposed of in a broken glass waste container and not placed directly into a trash can.
- Equipment should be periodically cleaned and preventive maintenance scheduled based on the manufacturer's operating instructions (refrigerators, incubators, freezers, autoclaves, fume hoods...etc.) and spills contained and responded to quickly and appropriately.
- Secure all compressed gas cylinders to a cylinder rack or chained securely to a wall or benches to prevent a tip-over.
- Equipment greater than 5 feet tall should be seismically secured to prevent tipping during an earthquake.
- Shelves should have lips, wires, or other seismic restraints to prevent items from falling during an earthquake.

Proper storage and the safe use of hazardous substances are necessary for the continued operation of any laboratory. Hazardous materials are generally necessary for their educational value in science labs. Since hazardous substances are necessary to operate a laboratory, it is important that the users of these substances practice safe storage, handling, and use procedures to ensure the exposure and loss potential is minimized.

Injury or illness to employees, students, or visitors, damage to District owned or leased properties, and damage to the property of others, are all examples of the loss potential resulting from the misuse of hazardous substances. Proper storage, handling, use procedures, and techniques will decrease the probability of loss both in terms of frequency and severity. With this in mind, the following general principles for safe and healthy lab work are given:

- It is prudent to minimize all chemical exposures. Because few laboratory chemicals are without hazards, general precautions for handling all laboratory chemicals should be adopted, rather than specific guidelines for particular chemicals. Skin contact with chemicals should be avoided as a cardinal rule.
- Avoid underestimation of risk. Even for substances of no known significant hazard, exposure should be minimized. For work with substances that present special hazards, special precautions should be taken. One should assume that any mixture will be more toxic than its most toxic component, and that all substances of unknown toxicity are toxic.
- All containers supplied by manufacturers or suppliers, and holding hazardous materials, should have labeling that provides at least the chemical identity, a list of hazardous ingredients, hazard warnings, date received, and the name and address of the manufacturer or supplier. Portable containers, into which hazardous substances have been transferred to from properly labeled, larger containers, must have labels that provide at least the chemical identity and hazard warnings. Employees should follow guidelines provided by the manufacturer or supplier for storage, handling, and use. Employees should not use chemical substances from unlabeled or improperly labeled containers.
- A Material/Safety Data Sheet (M/SDS) is a document prepared by the manufacturer or supplier of hazardous substances. This document contains pertinent information regarding health hazards and safety precautions necessary for use with a given substance. The M/SDS contains information on storage patterns, storage conditions, incompatibles, personal protective equipment, and other precautions necessary for safe use of the substance. Employees should be familiar with the contents of the M/SDS for the hazardous materials that they work with and where the M/SDS is kept. Employees should be encouraged to review the M/SDS before using a hazardous material. **NOTE: The District will be replacing all MSDS with SDS as required by Cal/OSHA per the new GHS policy by June of 2016.**
- Although container labels may have safety precaution information, the M/SDS is generally more comprehensive in the scope and amount of information provided. Therefore, the M/SDS should be considered an extremely important tool for obtaining information regarding safe storage, handling, and use procedures.
- The M/SDS provides information on routes of entry (or how one may be exposed to a hazardous material), personal protective equipment, and other methods of protection from over exposure. Once the user of a hazardous material knows the health hazards associated with the use of the material and how exposures occur, the next step is to take appropriate action to prevent over exposure and the resulting health effect.
- By knowing the route of entry (such as through inhalation, skin contact, or ingestion), the users

of hazardous materials can protect themselves by following the manufacturer's recommended procedures, using appropriate personal protective equipment, practicing good personal hygiene, and having other protective devices available as specified by the manufacturer.

- Ventilation is an engineering control that is an important consideration in controlling exposures to hazardous materials. The ventilation requirements will be detailed on the M/SDS, and may also be listed on the container label. All employees should be instructed to adhere to manufacturer's guidelines regarding the use of hazardous materials and the ventilation required for safe use. If engineering controls are not feasible, or do not reduce exposure to an appropriate level, then exposures should be reduced by limiting the amount of time of exposure (both frequency and duration), or by requiring the use of personal protective equipment.
- Personal protective equipment includes such items as respiratory protective equipment, eye goggles, face shields, gloves, aprons, and shoes that cover and protect the feet. The M/SDS will list all equipment that should be available when using a given hazardous substance. Personnel should not be using hazardous materials unless the appropriate personal protective equipment has been provided, and they have been trained in the proper use of such equipment.
- Other protective measures that can reduce the loss potential include the use or installations of appropriate fire extinguishers, eyewash stations, deluge or quick drench showers, spill kits, and proper storage facilities.
- Employees will not be required to work with or use hazardous substances for prolonged periods or have repeated exposures, unless proper precautions have been taken to keep exposures to safe levels.
- Provide adequate ventilation. The best way to prevent exposure to airborne substances is to prevent their escape into the working atmosphere by use of hoods and other ventilation devices.
- Institute a Chemical Hygiene Plan. A mandatory Chemical Hygiene Plan designed to minimize exposures is needed and will be a regular, continuing effort, not merely a standby or short-term activity. The Plan's recommendations will be followed in academic teaching laboratories, as well as by full-time laboratory workers.
- Observe the exposure limits and Threshold Limit Values (TLV). The exposure limits of Cal-OSHA and the TLV of the American Conference of Governmental Industrial Hygienists (ACGIH) should not be exceeded.
- Disposal of hazardous waste is a major concern for all laboratories. The goal of the Plan is to ensure minimal harm to laboratory occupants, other site occupants, other organisms, and the environment while complying with governmental regulations in a cost efficient manner. The section on each individual M/SDS that references disposal should be followed. All hazardous waste is to be placed in clearly labeled containers with the date accumulation began. The containers are to be kept sealed.

SECTION II

CRITERIA TO BE USED FOR IMPLEMENTATION OF MEASURES TO REDUCE EXPOSURES

Engineering controls, the use of personal protective equipment, hygiene practices and housekeeping are control measures the District has implemented to reduce employee exposure to laboratory chemicals.

ENGINEERING CONTROLS

Engineering controls consist of controls designed to physically separate, segregate, or remove exposures from laboratory personnel. Engineering controls used in the Physical Science, Biological Science, Chemistry, and Environmental Science Departments consist of items such as the following:

- General ventilation
- Local ventilation
 - ◆ Fume hoods
 - ◆ Biosafety cabinets
- Segregation
 - ◆ Segregating the chemicals from the user through the implementation of fume hoods.
 - ◆ Segregation of incompatible chemicals in a well-identified area with local exhaust ventilation.

Ventilation

Ventilation is provided for two basic considerations: 1) for the comfort of the building occupants; and 2) for health and safety considerations for those working in laboratories, preparation, and chemical storage areas. Often the two areas conflict with one another when viewing ventilation from a standpoint of efficiency. The health and safety considerations should always be the primary concern. Comfort ventilation provides for tempered air and odor elimination. Health and safety ventilation provides for the dilution and removal of potential harmful air contaminants.

Local ventilation is used for the removal of air contaminants from the workplace atmosphere. Local pickups exhausting through flexible hoses may be used effectively to remove fumes from well-defined sources of fumes, but their effectiveness may be limited due to the following:

- Air movement toward the nozzle is reduced to less than 10% of the original value once the nozzle is moved a distance equal to its diameter from the source.
- The exhausting ductwork poses problems if one or more exhaust fans fail.

Unless specific requirements dictate a specific chemical or biological hood, a general purpose hood may be used. The chosen hoods should offer the following features:

- Positive velocity sensors with visual and audible alarms.
- Corrosion resistance.
- Easily decontaminated.
- The ability to safely handle flammable materials.

Each hood installation should be configured by a ventilation engineer, especially with regard to the blower motor requirements.

Hoods should be selected with movable sashes, preferably a vertical sliding type. Laminated safety glass is probably considered the best material for sashes.

Fume hoods will be evaluated before initial use and at least annually to ensure an average face velocity of at least 100 linear feet per minute (lfm) with a minimum of 70 lfm at any point, and with the absence of excessive turbulence.

Fume hoods are not intended primarily for the storage of chemicals; therefore, material storage in hoods is kept to a minimum. Stored chemicals should never block vents or alter airflow patterns.

Hood ventilation shall remain in operation during all times hoods are in use, and for a sufficient time thereafter, to ensure all airborne contaminants have been removed. When mechanical ventilation is not in operation, hazardous substances in the hood must be covered.

Biosafety Cabinets

The Biological Safety Cabinet (BSC) is another primary engineering control in the laboratory. It is commonly used as a containment and protection device in laboratories working with biohazardous and infectious microorganisms. Cabinets are also used for maintaining aseptic conditions when working with cell cultures. The major functional element of a BSC is its ability to create a near-sterile environment through the use of High Efficiency Particulate Air (HEPA) filters. Thus, BSCs provide personnel, environmental, and product protection when appropriate practices and procedures are followed.

There are three different classes of BSCs which are not directly related to the Biological Safety Levels (BSLs) required for the microbiological agent being used. Generally, Class I and Class II cabinets can be used for work at BSLs 1 to 3. Class III cabinets are usually reserved for work at BSL4, although a Class II cabinet can be used at this level if the appropriate personal protective equipment is used.

Class I Biosafety Cabinet

A ventilated cabinet for personnel and environmental protection with non-recirculated inward airflow away from the user. The cabinet exhaust air is HEPA filtered before it is discharged to the outside atmosphere. This cabinet resembles a chemical fume hood with a filtered exhaust and is suitable for work with low and moderate risk biological agents where no product protection is required.

Class II Biosafety Cabinet

A ventilated cabinet for personnel, product and environmental protection having (1) an open front with

inward airflow for user protection, (2) downward HEPA-filtered; laminar airflow for product protection, and (3) HEPA- filtered exhausted air for environmental protection. Class II cabinets are suitable for low- and moderate-risk biological agents.

There are four recognized types of Class II biosafety cabinets that are widely used. These are Class II types: A, B1, B2, and B3. The nature of the particular research operation, the characteristics of a laboratory's exhaust system, and the mandated regulations will determine which type of Class II cabinet can be used.

Class III Biosafety Cabinet

A totally enclosed ventilated cabinet of gas-tight construction. Operations in the cabinet are conducted through attached rubber gloves. The cabinet is maintained under negative air pressure of at least 0.5 inches (12.7 mm) water gauge. Supply air is drawn into the cabinet through HEPA filters. The exhaust air is treated by double HEPA filtration. Class III cabinets are suitable for high-risk biological agents and are accompanied by auxiliary safety equipment.

NOTE: Hazardous chemicals cannot be used in a biosafety cabinet. Damage to the cabinet could result in rendering the cabinet ineffective.

Evaluation of Fume Hood Performance/Inspections

All fume hoods will be evaluated for performance when they are installed, on an annual basis and any time there is a change in any aspect of the ventilation system (e.g., change in total volume of supply air, changes in locations of supply air ports, or the addition of other auxiliary local ventilation devices). *Additional surveys may be conducted at the beginning of each semester at the direction of the Chemical Hygiene Officer.* Performance evaluations should include hood comparison of evaluation results to design specifications for uniform airflow across the hood face and for the total exhaust air volume.

The Laboratory Technician will be responsible for ensuring that the fume hoods are inspected by an external hood service provider selected by the College to ensure the units are operating at the adequate ventilation rate. If deficiencies are identified, the *Facilities Department and/or hood service provider will be notified to rectify any deficiencies.* Appropriate corrective action will be taken. Items specific to the operation of the Fume Hoods can be found in the Laboratory Safety Checklist and Fume Hood Survey Sheet, located in the appendix. These checklists will be kept on file for at least 5 years for recordkeeping purposes.

Ventilation Maintenance

Local and general ventilation systems supplying laboratories will be on a preventive maintenance plan to ensure continued proper operation. The Chemical Safety Officer and appropriate educational administrator will review design specification and manufacturer's recommendations, to determine an appropriate frequency for preventive or routine maintenance. At a minimum, the preventive maintenance should include:

- Inspection of air intakes and exhausts.
- Inspection of belts or other moving components.
- Inspection of all motors and fans.
- Lubrication of all appropriate items such as bearings, gears, etc.
- Cleaning and/or replacement of filters.

All Biosafety cabinets are to be inspected and certified by a qualified vendor on an annual basis. After each inspection, an inspection sticker is affixed to the BSC.

PERSONAL PROTECTIVE APPAREL AND EQUIPMENT

Personal protective equipment and safety and emergency equipment are necessary to ensure that exposures to laboratory personnel are kept to a minimum and within safe levels.

Safety and emergency equipment is available and maintained in good operating condition in all laboratories. All laboratory personnel are aware of the equipment location and of its proper use. The following safety and emergency equipment are considered as minimum standard requirements for all laboratories:

- **Telephones.** Telephones for emergency use are readily available to laboratory personnel. Emergency phone numbers should be clearly identified.
- **Fire Alarms.** At a minimum, manual fire alarms should be located at or near each laboratory. Consideration should be given to installing automatic fire detection and alarm systems. The alarms should have both local and remote stations.
- **Fire Extinguishers.** Each chemical laboratory is provided with either a carbon dioxide or dry chemical extinguisher, or both. Other extinguishers (such as Class D type) should be available if required by the work being done. Fire extinguisher locations are clearly identified and near exits to ensure safe egress. Each fire extinguisher are recharged and certified at least annually, with monthly inspections between annual recharging.
- **Fire Blankets.** Fire blankets are available primarily as first aid for the prevention of shock. Fire blankets are used only as a last resort to extinguish clothing fires, as the blankets tend to hold heat in and may increase the severity of burns.

- **Deluge or Quick Drench Showers.** Showers are installed in or near laboratories, chemical preparation, or chemical storage areas, especially if corrosives or toxics are handled. Safety showers are tested at periodic, regular intervals. All laboratory personnel are trained in the proper use of the shower.
- **Eyewash Stations.** Each chemical laboratory and preparation area is installed with an eyewash station. The station provides at least 15 minutes of aerated water flow.
- **Miscellaneous emergency equipment:**
 - ◆ Spill clean-up stations.
 - ◆ Eye protection equipment.
 - ◆ First aid kits.

Inspection of Emergency Eyewash Stations/Deluge Showers

All emergency eyewash stations and deluge showers will be inspected monthly by the Laboratory Technician to ensure the units function properly and perform adequately. The inspection tags on each of the units will be marked with the initials of the inspector and the date inspected.

BASIC PERSONAL PROTECTIVE EQUIPMENT

In addition to safety and emergency equipment, certain personal protective equipment is available for all laboratory personnel. *All laboratory personnel who may use protective equipment are trained in its proper use and the equipment will be inspected regularly by the Laboratory staff.* Basic personal protective equipment should include:

- **Eye Protection.** Eye protection is worn any time chemicals are used. Eye protection can include:
 - ◆ **Safety Glasses or Goggles.** Safety glasses or goggles that meet the current American National Standards Institute (ANSI) safety standards should be worn when working with chemicals. Safety glasses, especially those fitted with side shields, can offer good protection from both splash and impact resistance.
 - ◆ **Face Shields.** Face shields can be used in conjunction with safety goggles to provide protection for the face and neck.
- **Skin Protection.** Skin contact is a potential source of exposure to hazardous materials. Add water to promptly flush any area of skin contact to hazardous materials. Protective apparel that can protect the skin includes:
 - ◆ **Gloves.** Hands have a great potential for skin exposure; therefore, gloves should be worn whenever it is necessary to handle corrosive materials, sharp-edged objects, very hot or very cold materials, or toxics. When using gloves, the following should be

considered:

- Gloves should be selected on the basis of the material being handled, the hazard involved, and their suitability for the operation being conducted.
 - Gloves should be inspected for discoloration, punctures, and tears before each use.
 - Information should be obtained from glove manufacturers regarding uses for specific types of gloves. The manufacturer's data (such as permeation rate and thickness) should be used to determine safe time limits for specific uses.
- ◆ **Laboratory Coats.** Laboratory coats do not significantly resist penetration by organic liquids. However, the coats do provide protection to clothing from dirt and minor chemical splashes.
- ◆ **Aprons.** Plastic or rubber aprons provide good protection from corrosive liquids, but may complicate injuries in the event of fire. Plastic aprons can accumulate a charge of static electricity; therefore, plastic aprons should be avoided when handling flammables.

HYGIENE PRACTICES

The three most common routes of entry of hazardous chemicals into the body are inhalation, ingestion, and skin contact. All exposures to hazardous chemicals that may result in harmful effects on the body can be reduced by implementing and enforcing good personal hygiene practices.

Basic rules for good hygiene in chemical and biological laboratories include:

- Minimize all chemical exposures.
- Work with chemicals should only be done in well-ventilated areas.
- Promptly flush any area of the skin, which has become contaminated with any laboratory chemical.
- Do NOT smell or taste any laboratory chemical.
- Inspect all personal protective equipment (such as gloves and goggles) before use.
- Do NOT release chemicals into the atmospheres of rooms supplied by recirculated air.
- Avoid eating, drinking, smoking, gum chewing, and the application of cosmetics in areas where laboratory chemicals are stored, used, or otherwise handled.

- Avoid storage, handling, preparation, or consumption of food or beverages in chemical storage or preparation areas.
- Always wash hands after chemical handling and before eating, drinking, smoking, or the applying of cosmetics.

HOUSEKEEPING

Housekeeping inspections are important functions that support a clean and safe work area, and help to reduce exposures to laboratory personnel. Following are minimum guidelines for these functions.

- Floors in laboratories, stockrooms, preparation rooms, and storerooms should be cleaned regularly (at least daily in laboratories and prep rooms).
- Stairways, hallways, and passageways should not be used as storage areas.
- Stairways, hallways, passageways, exits, and any other means of emergency egress should always be kept clear and in good repair.
- Trash should be removed daily.
- Chemical containers should not be stored on floors.
- Waste should be placed in appropriate receptacles.
- Chemical spills should be cleaned up immediately and the waste properly disposed. Unlabeled containers and chemical waste should be properly disposed within the regulatory mandated time frame.
- Chemical inventories should be updated at least annually. All chemicals found to no longer be needed should be removed and properly disposed.
- Access to utility controls and emergency equipment should be kept free and clear at all times.

Housekeeping Inspections

Formal housekeeping and chemical hygiene inspections will be conducted at least annually by the Laboratory staff. The inspection checklists provided in Appendix D will be used and completed for each laboratory inspection and will be kept on file for recordkeeping purposes for at least 5 years. The completed checklist will be forwarded to the Chemical Hygiene Officer.

EGRESS/LIFE SAFETY

Science building operations increase the potential of emergency situations that may require building evacuation. Events such as fires, explosions, and spills may require or cause alarms to be activated followed by the evacuation of the building. The means of egress will follow the local and State of California regulations, which involve building occupancy.

SIGNS & LABELS

One way of reducing exposures to laboratory personnel is to ensure that appropriate warnings are provided prior to exposure. All posted signs and labels should be clearly visible and maintained in good condition. Signs and labels should include:

- Emergency information:
 - ◆ Important telephone numbers.
 - ◆ The District's policy regarding Emergencies is to dial 7 (Valencia) or 77 (CCC)
- Location signs:
 - ◆ Eyewash stations.
 - ◆ Deluge showers.
 - ◆ First aid equipment.
 - ◆ Fire extinguishers.
 - ◆ Exits.
- Warnings for areas or equipment which pose special hazards:
 - ◆ Flammable storage areas.
 - ◆ Oxidizer storage areas.
 - ◆ Bulk corrosives storage areas.
 - ◆ Toxic storage.
 - ◆ Radioactives.
 - ◆ Biohazards.
 - ◆ Extremely hot or cold equipment.
- Miscellaneous signs:
 - ◆ Expected laboratory attire
 - ◆ Expected laboratory behavior
 - ◆ Required eye protection
 - ◆ Identify where food and beverage storage and/or consumption are not permitted.
 - ◆ Identify "NO SMOKING" areas.

- Container labeling:
 - ◆ Labels on incoming containers should not be removed or defaced.
 - ◆ All chemical containers should be labeled with at least the chemical identity or contents and hazard warnings as well as date when the chemical was received or prepared.
 - ◆ Carcinogens should be clearly labeled as such.
 - ◆ Hazardous waste containers should be labeled “HAZARDOUS WASTE”, the waste type identified, and the date accumulation began noted on the label.

SPILLS & ACCIDENTS

Laboratories may be subject to a number of emergencies including chemical spills, fire, explosion, personnel contamination, broken glass, and loss of critical utility services. The Chemical Hygiene Officer and all laboratory personnel will be prepared to react to any potential hazard.

SECTION III

STANDARD OPERATING PROCEDURES **FOR CHEMICAL STORAGE & USE**

As stated in prior sections, all hazardous substances should be stored, handled, and used in accordance with the information provided by the manufacturer through container labeling and the M/SDS. In addition, technical references can provide general safety precautions for the storage and use of both specific chemicals and general categories of hazardous materials.

The following standard operating procedures are provided as basic procedures intended to ensure a safe and healthful workplace for laboratory personnel during the use of hazardous laboratory chemicals. These procedures are provided for basic “groups” or “families” of chemicals, and should be used in conjunction with appropriate M/SDS to ensure specific operating procedures are known for individual chemicals.

CHEMICAL STORAGE

Chemical storage should generally be limited to only those rooms designed and designated for chemical storage. Laboratories should only be used for short-term storage and for only the reagents necessary for the current project. Chemical storage facilities should consider the following:

- Control of access.
- Adequate space for safe storage.
- Segregation of incompatibles.
- Flammable Liquid storage.
- Corrosives storage.
- Toxics storage.
- Compressed gases storage.
- General chemical storage.
- Hazardous Waste storage.

FLAMMABLE/COMBUSTIBLE LIQUIDS

- Store in a well-ventilated area away from oxidizers, ordinary combustibles, and sources of heat or ignition.

- Always store in covered containers.
- Use approved safety cans for dispensing at the point of operation.
- Air pressure will never be used to remove liquids from a drum or tank.
- Provide spill containment for drum and bulk storage areas.
- Store rooms used for flammables must have either gravity or mechanical ventilation. Mechanical ventilation is required if Class I flammable liquids (flash point below 100° F) are dispensed.
- Flammable liquids stored in work areas or general-purpose storerooms in quantities exceeding 10 gallons, should be stored in approved flammable liquid storage cabinets.
- All flammable liquid storage areas should be clearly identified with signs or symbols.
- Flammables used at the point of operation should not be dispensed from containers larger than four (4) liters, unless from an approved safety can. If an approved safety can is used to dispense flammables, then the can may be up to two (2) gallons in size.
- Strong consideration should be given to using only approved safety cans to dispense flammable liquids at the point of operation.
- Appropriate fire extinguishers for Class B (flammable or combustible liquid) fires should be available within 50 feet from where flammable liquids are stored or used.
- Flammable materials storage and use areas should be clearly marked “NO SMOKING OR OPEN FLAME”.

CHLORINATED HYDROCARBONS/SOLVENTS

- Use only in well-ventilated areas.
- Do NOT use from open containers unless ventilation is adequate to draw vapors from the work area.
- Keep away from open flames or excessive heat.
- Provide spill containment for drum or bulk storage areas.

OXIDIZERS

- Store in a well-ventilated area.
- Store away from combustibles, organic matter, reducing agents, and sources of heat or ignition.

- Keep oxygen cylinders free of oil, grease, dirt, or other contaminants.

COMPRESSED GASES/AEROSOLS

- Compressed gas cylinders will always be stored away from external heat sources, and located such that they will not be damaged by passing or falling objects. When possible, they will be stored upright with the cylinder secured.
- Cylinders not in use will be stored with valve protection caps in place.
- Oxygen cylinders in storage will be segregated from flammable gas cylinders (such as acetylene and hydrogen) by at least 20 feet or by a non-combustible wall at least 5 feet high.
- Oxygen cylinder storage areas will be clearly marked “OXIDIZER”.
- Flammable gas cylinder storage areas will be clearly marked “FLAMMABLE GAS” and “NO SMOKING OR OPEN FLAME”.
- All gas cylinders will be clearly marked either “FULL” or “EMPTY”.
- All compressed gas cylinders will be legibly marked with the chemical or trade name of the gas.
- Empty cylinders should not be refilled except by the supplier.
- All gas cylinder connecting hoses, couplings, and pressure regulators will be regularly inspected for defects.
- When appropriate, a check valve or trap will be installed in the discharge line to prevent hazardous back flow into the cylinder.
- Aerosols will not be stored in areas where the temperature may exceed 120°F.

CORROSIVES

Corrosives pose an immediate danger to personnel upon contact to any human tissue. Because of the acute health hazard and the potential for permanent injury, the following apply:

- Storage and use of corrosives will be in well-ventilated areas.
- When feasible, corrosives will be stored in cabinets dedicated to corrosive storage.
- Bulk storage areas will have spill containment barriers.
- Large bottles containing corrosives are to be transported in appropriate bottle carriers.
- Acids will be segregated from substances that they are reactive with (such as metals, metal oxides, hydroxides, amines, carbonates, and other alkaline materials).

- Acids will be segregated from chemicals that generate toxic gases upon contact (such as chlorides, cyanates, cyanides, fluorides, hydrides, and sulfides).
- Oxidizing acids will be segregated from organic acids and flammables.
- Nitric acid will be segregated from all other acids.
- Personnel using or handling corrosives should always wear splash-proof eye goggles.
- Personnel involved in any operation using corrosives with a high probability of splashing, should be required to wear face shields, rubber gloves, and rubber aprons in addition to the splash-proof eye goggles.
- Areas where corrosives are stored or used in one gallon containers (or larger) should be equipped with plumbed-in eyewash stations and deluge showers.
- Due to the potential for falls, spills, splashes, and personnel contamination from storage at high levels, corrosives should not be stored above eye level.
- Corrosives in laboratories should be stored in approved corrosive storage cabinets. Small quantities may be stored on shelves in polyethylene or ceramic trays to contain spills or leaks.
- Personnel using corrosives should be aware of the potential for permanent eye damage should a corrosive contact the eye. Therefore, persons using corrosives should be familiar with the sources in their workplace for eye flushing and the proper technique (eyelids must be rolled during flushing and the eye should be flushed for at least 15 minutes). Emergency procedures for eye contact with a corrosive should always include contacting a physician.

TOXICS

- Storage will only be in containers clearly marked “POISON”.
- When feasible, storage containers will be kept in a dedicated cabinet clearly labeled and kept locked.
- Toxics should only be used and stored in well-ventilated areas.
- Cyanides, chlorides, and sulfides will be segregated from acids.
- The cabinets or rooms used for the storage of highly toxic materials should have appropriate warnings, and poison control phone numbers posted.
- Access to the cabinets or rooms should be controlled with only authorized personnel permitted access.

- Highly toxic substances should be used in the classroom only after a review of health hazards, routes of entry, safety precautions, and first aid. And then, only used under the strict supervision of the instructor.

REACTIVES

- Storage should only be in cool, dry, well-ventilated areas.
- Reactives should be kept away from sources of heat and ignition.
- Water reactive materials should not be stored in a room with an automatic water sprinkler system unless precautions have been taken to ensure that the materials can remain dry in the event of sprinkler activation.
- Pyrophoric materials such as sodium, potassium, lithium, and strontium should be segregated from halogenated hydrocarbons, oxidizers, and moisture. Storage should only be in containers with the materials completely covered with an oxygen free liquid (such as toluene, kerosene, or mineral oil).
- Phosphorous should only be stored in containers with the substance completely covered with water.

ORGANIC PEROXIDES

Organic peroxides have unusual stability problems, which make them among the most hazardous substances handled in laboratories. As a class, they are low-power explosives sensitive to shock, sparks, heat, friction, strong oxidizing agents, and reducing agents. The following types of compounds are known to form peroxides:

- Aldehydes
- Ethers
- Compounds containing benzylic hydrogen atoms (e.g., cumene)
- Alkenes
- Vinyl and vinylidene compounds

Some specific chemicals from the above categories commonly found in laboratories include Diisopropyl Ether, Ethyl Ether, Tetrahydrofuran, Tetrahydronaphthalene, Cyclohexene, P-Dioxane, and Dicahydronaphthalene.

Preventive measures for peroxides include:

- All peroxides and peroxide formers must be clearly labeled with information regarding date opened.
- Quantities of peroxides should be limited to the minimum required.
- Unused peroxides should not be returned to the container.

- All spills should be cleaned up immediately; peroxide solutions can be absorbed on vermiculite.
- The sensitivity of most peroxides to shock and heat can be reduced by dilution with an inert solvent. However, solutions of peroxides diluted in volatile solvents should not be used under conditions in which the solvent may be vaporized.
- Do NOT use metal utensils to handle peroxides. Ceramic or wooden utensils are acceptable. Smoking, open flames, friction, grinding, other heat sources, and all forms of impact should be avoided near peroxides.
- Do not use glass containers that have screw-cap lids or glass stoppers to store peroxides.
- Peroxides should be stored at the lowest possible, appropriate temperature.
- Never dispose pure peroxides directly. Peroxides must be diluted before disposal.

CRYOGENS: (chemicals at extremely low temperatures - e.g., liquid nitrogen)

Liquid nitrogen and dry ice are capable of causing freezing injuries such as frostbite which actually are similar to a burn. M/SDS sheets should be viewed whenever handling cryogenic materials to determine the appropriate personal protective equipment. This would include cryogenic protective gloves and a face shield at a minimum. When dispensing liquid Nitrogen, a full face shield with goggles underneath, chemical splash apron and cryogenic protective gloves must be worn. In the event of skin contact with a cryogenic material, immediately rinse the skin with warm, not hot, water for a full fifteen minutes and then seek professional medical attention.

SECTION IV

CONTROL MEASURES FOR EXTREMELY HAZARDOUS SUBSTANCES

General precautions to be followed when working with any chemical that has been identified in the Standard Operating Procedures, Section I of this Plan. These general rules, procedures, and precautions should be reviewed and followed, as the basic foundation for safety when working with the following:

- Substances of moderate, chronic, or high acute toxicity.
- Substances of high known high chronic toxicity.
- Cal-OSHA or Federal OSHA listed carcinogens.

Additional control measures are appropriate when working with any substance falling into one of the above categories. Following is an identification of appropriate, additional safety procedures for each group:

SUBSTANCES OF MODERATE, CHRONIC, OR HIGH ACUTE TOXICITY

- Follow all general rules, procedures, and precautions as discussed throughout this Plan.
- Review the M/SDS or consult a reference resource, which identifies toxic properties to learn or refresh what is known about the substance(s) that will be used.
- Maintain records of the material, amounts used, and laboratory personnel involved.
- Procedures involving volatile toxic substances or those that may generate aerosols should be conducted in a hood or other suitable containment device.
- Plan to contain accidental spills in the hood by storing containers of chemicals in this group in polyethylene pans or trays, or fit the hood with a removable liner of absorbent plastic backed paper.
- If special toxicity hazards exist, the work area should be posted “RESTRICTED ACCESS”.
- Whenever cyanides are used or stored in hoods, warning or no admittance signs should be posted on doors to fan lofts and roofs (where the hood exhausts).
- A hydrogen cyanide gas (HCN) first aid kit, and an oxygen cylinder equipped with pressure gauge and needle valve, should be available on any floor of a building on which work with cyanides is in progress. The oxygen cylinder should be clearly marked for emergency HCN first aid. The HCN first aid kit should contain a box of amyl nitrate pearls, a face piece, rubber tubing for administering oxygen, and a bottle of 1% sodium thiosulfate solution.

NOTE: Only trained and qualified emergency response personnel are authorized to use an HCN first aid kit.

- Wastes of chemicals in this category should be placed in closed impervious containers. The containers should be labeled with the contents, type of hazard, and the date in which accumulation began.
- Only personnel wearing appropriate, personal protective equipment and that has proper training should clean up spills.
- If work is to be done with highly or extremely toxic materials, it is suggested that at least two people should be present at all times.

SUBSTANCES OF KNOWN HIGH CHRONIC TOXICITY

- Follow all rules, procedures, and precautions identified above.
- Experimental work and disposal procedures for waste should be approved by the laboratory supervisor.
- Consultation with the department or site safety coordinator may be appropriate.
- All chemical containers should be clearly labeled with appropriate hazard warnings (e.g. “WARNING! HIGH CHRONIC TOXICITY” or “WARNING! CANCER SUSPECT AGENT”).
- All work of this nature should be done in a controlled area (such as a laboratory, portion of a laboratory or exhaust hood designed and designated for use with highly toxic materials).
- Controlled areas should be clearly marked with signs such as the following:
 - ◆ WARNING! TOXIC SUBSTANCE IN USE: AUTHORIZED PERSONNEL ONLY.
 - ◆ WARNING! CANCER SUSPECT AGENT: AUTHORIZED PERSONNEL ONLY.
- Appropriate personal protective apparel should be worn when transferring or handling substances of high chronic toxicity.
- Laboratory personnel should remove any protective apparel when leaving the controlled area, and thoroughly wash hands, forearms, face, and neck.
- Disposable apparel or absorbent paper liners should be placed in closed, impervious containers that are properly labeled. Non-disposable apparel should be thoroughly washed.
- Normal laboratory work should not be resumed in an area that has been used as a controlled area, until it has been adequately decontaminated.

WORKING WITH CARCINOGENS OR SUSPECTED CARCINOGENS

- Obtain written approval from both Management and CHO prior to using.
- Use only in a designated area with suitable warning signs to alert other workers, e.g., Danger, Cancer Hazard.
- Wear protective clothing and use the approved fume hood or other engineering controls.
- Use and store materials in a chemically resistant container in an appropriately ventilated limited-access area.
- Decontaminate the designated area and all equipment in the hood before removing them.
- Use a wet method to clean up liquids. For dry materials, use a vacuum with a HEPA filter vented into the hood.
- All waste must be stored in a closed, labeled, and impervious container.

CHEMICAL PROCUREMENT

An effective Plan begins with appropriate purchasing guidelines and controls. The disposal of hazardous materials is becoming increasingly difficult with rapidly escalating costs. Inadequate purchasing procedures will only complicate disposal problems. Basic procurement guidelines include:

- Before a substance is procured, information on proper handling, storage, and disposal should be known by all personnel involved in storage, handling, use, and disposal.
- No chemical container (including gas cylinders) should be accepted without adequate identifying labels.
- Preferably, all substances should be received in a central location.
- Donated substances and substances purchased outside of normal purchasing procedures are strictly prohibited, unless prior written approval is given by the CHO. Personnel bringing unauthorized substances into the work area may be held responsible for all removal and disposal costs incurred by the District.
- Extremely hazardous materials should only be purchased in quantities necessary for a designated procedure, and should not exceed an amount that can be used in a reasonable amount of time.

- General categories of materials to avoid are:
 - ◆ Carcinogens
 - ◆ Explosives
 - ◆ Highly or extremely toxic substances

The following procedures are in place to request chemicals:

- All requests are made by the Faculty to the Stockroom Supervisor (Laboratory Technician).
- The Laboratory Technician reviews the request
- The Laboratory Technician reviews the Material/ Safety Data Sheet (M/ SDS) and the hazards associated with the product.
- If the product is deemed a significant hazard, the Laboratory Technician takes the request to the Faculty member making the request to discuss the educational value in relation to the hazard.
- The Laboratory Technician will take the request to the appropriate instructional administrator if there is no agreement between the Laboratory Technician and the Faculty member. The decision of the appropriate instructional administrator prevails.

SECTION V

MEDICAL CONSULTATION & MEDICAL EXAMINATIONS

The District is implementing a Chemical Hygiene Plan, which is designed to keep exposures below permissible exposure limits and to protect laboratory employees from health hazards associated with the hazardous chemicals stored, used, or handled in any District laboratory. Although precautions and procedures are designed to protect employees, the District realizes there may be times when medical attention would be appropriate for laboratory employees working with hazardous chemicals. To ensure employees have an adequate opportunity to receive medical attention, including medical consultation and/or medical examinations, the District will implement the following:

- The District will provide an opportunity to any laboratory employee to receive an appropriate medical examination, whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory.
- The District will implement medical surveillance as designated by Cal-OSHA standards for regulated substances, when exposure monitoring reveals exposure levels above the action level (or exposure limit when no action level is stipulated), for any Cal-OSHA regulated substance having exposure monitoring or medical surveillance requirements.
- The District will provide an opportunity to any laboratory employee for medical consultation as a means of determining the need for a medical examination, whenever an event (such as a spill or leak) occurs in a laboratory that results in a strong possibility of a hazardous exposure.

If medical examinations or medical consultations are required, the District will ensure the following conditions:

- They are performed by or under the supervision of a licensed physician.
- They are provided at no cost to the employee.
- They are provided at a reasonable time and place without loss of pay to the employee.

The District will take reasonable and appropriate action to obtain and provide the physician with information regarding the exposure. At a minimum, the District will provide the following information:

- The identity of the hazardous chemicals causing the exposure.
- A description of the conditions under which the exposure occurred.
- Quantitative exposure data, if available.
- A description of any signs or symptoms of exposure that the employee may have experienced.

The District will obtain a physician's written opinion from the examining or consulting physician for any medical examinations or consultation provided under this Plan. The physician shall be notified that the written opinion is not to reveal any findings or diagnoses unrelated to occupational exposure. However, the opinion shall include the following:

- Any recommendations for further medical follow-up.
- The results of the examination and associated tests, if requested.
- Disclosure of any medical condition revealed by the examination, which may place the employee at increased risk if exposed to a hazardous chemical in the laboratory.
- A statement that the employee has been informed by the physician of the results of the examination or consultation.
- A statement that the employee has been informed by the physician of any medical condition which may require further treatment.

SECTION VI

EMPLOYEE INFORMATION & TRAINING

GOAL

The District will make available an information and training program to all laboratory employees. The goal of this program is to ensure that all laboratory personnel are adequately informed about laboratory work, appraisal of the hazards of chemicals present in the laboratory, and that they are knowledgeable in what to do if an accident occurs.

FREQUENCY

The District will take appropriate action to provide initial employee training and information at the inception of the Chemical Hygiene Plan, or at the time of an employee's initial assignment to a laboratory covered under this Plan. Employees will also receive ongoing regular safety training as well as appropriate training prior to assignments involving new exposure situations. The new employees will be trained at the beginning of each semester. They will be provided a copy of the plan. The District believes that training should be a regular, continuing activity; therefore, refresher training will be provided at periodic, regular intervals. The basic rule is to provide refresher training, preferably once per year, which will be provided by the Chemical Hygiene Officer or other District-appointed designee. This frequency may be adjusted up or down depending on needs and assessments done by the Chemical Hygiene Officer.

CONTENT

The District will provide an education program, which will give employees adequate information and training to work safely around hazardous chemicals and laboratory equipment. At a minimum, the employee education program will consist of the following:

- Information employees will be informed of:
 - ◆ The contents of Title 8, Section 5191, "Occupational Exposure to Hazardous Chemicals in Laboratories".
 - ◆ The location and availability of the Chemical Hygiene Plan.
 - ◆ Exposure limits and action levels for Cal-OSHA regulated substances or recommended exposure limits for other hazardous chemicals not covered by an applicable Cal-OSHA regulation.
 - ◆ Signs and symptoms associated with exposures to hazardous chemicals.
 - ◆ The location and availability of the M/SDS.

- ◆ The location and availability of additional reference materials relating, but not limited to, safe laboratory practices, chemical handling, chemical storage, chemical disposal, and emergency procedures.
- Employees will be trained in:
 - ◆ Methods and observations which may be used to detect the presence or release of a hazardous chemical.
 - ◆ The physical and health hazards of chemicals in the laboratory work areas.
 - ◆ Measures which can be taken to protect oneself from health and physical hazards.
 - ◆ The applicable details of the District's written Chemical Hygiene Plan.
 - ◆ Proper disposal methods.

APPENDIX A

DEFINITIONS

Action level. A concentration designated in Title 8, California Code of Regulations for a specific substance, calculated as an eight (8)-hour time weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance.

Carcinogen (see "select carcinogen").

Chemical Hygiene Officer. An employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan.

This definition is not intended to place limitations on the position description or job classification that the designated individual shall hold within the employer's organizational structure.

Chemical Hygiene Plan. A written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment and work practices that

- (1) are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular work place and

- (2) meets the requirements of subsection 5191(e).

Chief. The Chief of the Division of Occupational Safety and Health.

Combustible liquid. Any liquid having a flashpoint at or above 100° F (37.8° C), but below 200° F (93.3° C) except any mixture having components with flashpoints of 200° F (93.3° C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

Compressed gas.

- (1) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F (21.1° C); or

- (2) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130° F (54.4° C) regardless of the pressure at 70° F (21.1° C); or

- (3) A liquid having a vapor pressure exceeding 40 psi at 100° F (37.8° C) as determined by ASTM D-323-72.

Designated area. An area which may be used for work with "select carcinogens," reproductive toxins or substances which have a high degree of acute toxicity. A designated area may be the entire laboratory, an area of a laboratory or a device such as a laboratory hood.

Emergency. Any occurrence such as, but not limited to, equipment failure, rupture of containers or failure of control equipment which results in an uncontrolled release of a hazardous chemical into the workplace.

Employee. An individual employed in a laboratory workplace who may be exposed to hazardous chemicals in the course of his or her assignments.

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

Flammable. A chemical that falls into one of the following categories:

- (1) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

- (2) "Gas, flammable" means:

- (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or

- (B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air greater than 12 percent by volume, regardless of the lower explosive limit.

(3) "Liquid, flammable" means any liquid having a flashpoint below 100° F (37.8° C), except any mixture having components with flashpoints of 100° F (37.8° C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(4) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in 29 CFR 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

Flashpoint. The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(1) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24 - 1979 (ASTM D 56-79) - for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100° F (37.8° C), or that do not contain suspended solids, and do not have a tendency to form a surface film under test; or

(2) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens closed tester), Z11.7 - 1979 (ASTM D 93-79) for liquids with a viscosity equal to or greater than 45 SUS at 100° F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(3) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)). Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above. Hazardous chemical. 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.

Appendices A and B of the Hazard Communication Standard (Section 5194) provide further guidance in defining the scope of health hazards and determining whether or not a chemical is to be considered hazardous for purposes of this regulation.

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

Laboratory scale. Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.

Laboratory-type hood. A device located in a laboratory, enclosed on five sides with a movable sash or fixed partial enclosure on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms. Hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.

Laboratory use of hazardous chemicals. Handling or use of such chemicals in which all of the following conditions are met:

(1) Chemical manipulations are carried out on a "laboratory scale";

- (2) Multiple chemical procedures or chemicals are used;
- (3) The procedures involved are not part of a production process, nor in any way simulate a production process; and

(4) "Protective laboratory practices and equipment" are available and in common use industry-wide to minimize the potential for employee exposure to hazardous chemicals.

Medical consultation. 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.

Organic peroxide. An organic compound that contains the bivalent -o-o- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer. A chemical other than a blasting agent or explosive as defined in Section 5237(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Physical hazard. A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Protective laboratory practices and equipment. Those laboratory procedures, practices and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals.

Reproductive toxins. Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

Select carcinogen. Any substance which meets one of the following criteria:

- (1) It is regulated by Cal/OSHA as a carcinogen; or
- (2) It is listed under the category, "known to be carcinogens," in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (1985 edition); or
- (3) It is listed under Group 1 ("carcinogenic to humans") by the International Agency for Research on Cancer Monographs (IARC) (Volumes 1-48 and Supplements 1-8); or
- (4) It is listed in either Group 2A or 2B by IARC or under the category, "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:
 - (A) After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m³;
 - (B) After repeated skin application of less than 300 mg/kg of body weight per week; or
 - (C) After oral dosages of less than 50 mg/kg of body weight per day.

Unstable (reactive). A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

Water-reactive. A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

APPENDIX B

CHEMICAL HYGIENE RESPONSIBILITIES

CHEMICAL HYGIENE RESPONSIBILITIES:

Responsibility for chemical hygiene rests at all levels including the:

1. Chemical Hygiene Officer, who has ultimate responsibility for chemical hygiene within the institution who must:
 - a. Work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices;
 - b. Monitor procurement, use and disposal of chemicals used in the lab;
 - c. See that appropriate audits and inspection records are maintained and results provided to the Safety Committee;
 - d. Help project directors develop precautions and adequate facilities;
 - e. Know the current legal requirements concerning regulated substances;
 - f. Seek ways to improve the chemical hygiene program; and
 - g. Update the Chemical Hygiene Plan and submit proposed changes to the Safety Committee when necessary.
2. Instructional Administrator, who is responsible for chemical hygiene in that unit and monitoring procurement of chemicals through assistance of the Chemical Hygiene Officer.
3. Laboratory Technician, who is responsible to:
 - a. Ensure that workers know and follow the chemical hygiene rules, that protective equipment is available and in working order, and that appropriate training has been provided;
 - b. Provide regular, formal chemical hygiene and housekeeping inspections including monthly inspections of emergency equipment (eyewash stations and deluge showers);
 - c. Ensure that fume hood surveys are done at least annually by an external hood service provider selected by the College, to ensure the units are operating at the proper ventilation rate (surveys may be conducted at the beginning of each semester as directed by the Chemical Hygiene Officer and/or appropriate instructional administrator).
 - d. Know the current legal requirements concerning regulated substances;
 - e. Determine the required levels of protective apparel and equipment; and
 - f. Ensure that facilities and training for use of any materials being ordered are adequate.
4. Laboratory Student Worker, who is responsible for:
 - a. Planning and conducting each operation in accordance with the institutional chemical hygiene procedures; and
 - b. Developing good personal chemical hygiene habits.
5. Facilities Planning and Management
 - a. Performing regular preventative maintenance on the general and local ventilation (fume hoods) in the laboratories.
 - b. Perform repairs on the emergency equipment and ventilation systems in the laboratories as reported or as needed.

APPENDIX C

BASIC LABORATORY SAFETY RULES

BASIC LABORATORY SAFETY RULES

The Chemical Hygiene Plan requires that laboratory personnel know and follow basic rules and procedures for working with chemicals. The basic rules and procedures lay the foundation for laboratory safety, and better comprehension of specific procedures as identified on the M/SDS and other sources for individual chemicals. The basic rules and procedures that should be used for essentially all laboratory work with chemicals include the following:

ACCIDENTS/SPILLS

- **Eye Contact:** Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention.
- **Ingestion:** Encourage the victim to drink large amounts of water (where appropriate) and seek medical attention.
- **Skin Contact:** Promptly flush the affected area with water for at least 15 minutes and remove any contaminated clothing. If symptoms persist after washing, seek medical attention.
- **Leaks/Spills:** Promptly cleanup leaks/spills using appropriate protective apparel, and the proper equipment and disposal methods. Ventilate the area, if necessary, and keep unnecessary and unprotected persons away from the area. Further information and instructions on clean-up can be obtained for specific chemicals by reading the M/SDS for that chemical.

AVOIDANCE OF “ROUTINE” EXPOSURE

- Develop and encourage safe habits.
- Avoid unnecessary exposure to chemicals by any route.
- Do not smell or taste chemicals.
- Vent any apparatus (vacuum pumps, distillation columns, etc.) that may discharge toxic chemicals into local exhaust devices.
- Inspect gloves before use.
- Do NOT allow the release of toxic substances in cold rooms or hot rooms since they contain recirculated atmospheres.

CHOICE OF CHEMICALS

- Use only those chemicals for which the quality of the available ventilation system is appropriate. When possible, select chemicals for experiments and procedures that pose minimal risks.

EATING, SMOKING, ETC.

- Avoid eating, drinking, smoking, gum chewing, or application of cosmetics in areas where laboratory chemicals are present. Wash hands before conducting these activities. Avoid storage, handling, or consumption of food or beverages in storage areas, refrigerators, glassware, or utensils that are also used for laboratory operations.

EQUIPMENT & GLASSWARE

- 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.

EXITING

- Wash areas of exposed skin well before leaving the laboratory.

HORSEPLAY

- Avoid practical jokes or other behavior that might confuse, startle, or distract another worker.

MOUTH SUCTION

- Do NOT use mouth suction for piping or starting a siphon.

PERSONAL APPAREL

- Confine long hair and loose clothing.
- Wear shoes at all times in the laboratory, but do not wear sandals, perforated shoes, or sneakers. Close toed and close heeled shoes are required. Flip flops and sandals are not permitted.

HOUSEKEEPING

- Keep the work area clean and uncluttered, with chemicals and equipment being properly labeled and stored.
- Clean up the work area upon completion of an operation or at the end of each day.

PERSONAL PROTECTION

- Assure that appropriate eye protection is worn by all persons (including visitors), where chemicals are stored or handled.
- Wear appropriate gloves when the potential for contact with toxic materials exists, inspect the gloves before each use, wash them before removal, and replace them periodically. Information on ordering gloves can be obtained through Lab Safety Supply at (800) 356-0783. A table listing various types of gloves and their applications are listed below:

Glove Type	Applications
Rubber, Plastic, or Synthetic Rubber Gloves (Neoprene & Nitrile)	Should be used for tasks involving oils, greases, solvents, and other chemicals such as acids and caustics. This type of glove can be applied to cleaning tasks.
Leather	Resists sparks, moderate heat, cuts, and abrasions. This type of glove can be applied to welding activities.
Cotton & Fabric	Protect against dirt, chafing, and abrasions. This type of glove may not be strong enough to endure rough, sharp, or heavy materials.
Coated Fabric	Provides protection for moderately concentrated chemicals. This type of glove can be used in laboratory tasks, provided it offers protection for the specific chemical hazard associated with the task.
Aluminized	Provides reflective and insulated protection. This type of glove can be used in welding, furnace, and foundry work.
Kevlar	Provides protection against hot and cold. This type of glove can be used in a wide variety of industrial applications.

- Use appropriate respiratory equipment when air contaminant concentrations are not sufficiently restricted by engineering controls or when inspecting the respirator before use.
- Use any other protective and emergency apparel and equipment as appropriate.
- Avoid the use of contact lenses in the laboratory unless necessary. If they are used, make sure splash goggles are worn over contact lenses.
- Remove laboratory coats immediately on significant contamination.

PLANNING

- Seek information and advice about hazards.
- Plan appropriate protective procedures.
- Plan positioning of equipment before beginning any new operation.

UNATTENDED OPERATIONS

- Leave lights on.
- Place an appropriate sign on the door.
- Provide for containment of toxic substances in the event of failure of a utility service (such as cooling water) to an unattended operation.

USE OF HOOD

- Use the hood for operations that might result in the release of toxic chemical vapors or dust.
- As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substance with a TLV of less than 50 ppm.
- 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 airflow.
- Leave the hood “ON” when it is not in active use if toxic substances are stored in it, or if it is uncertain whether an adequate general laboratory ventilator will be maintained when it is “OFF”.

VIGILANCE

- Be alert to unsafe conditions and see that they are corrected when detected.

WASTE DISPOSAL

- Ensure that the plan for each laboratory operation includes plans and training for waste disposal.
- Deposit chemical waste in appropriately labeled receptacles and follow all other waste disposal procedures of the Chemical Hygiene Plan.
- Do NOT discharge to the sewer any concentrated acids or bases, highly toxic, malodorous, or lachrymatory substances, or any other substances which might interfere with the biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage, or obstruct flow.

APPENDIX D

**LABORATORY CHEMICAL SAFETY CHECKLIST
MONTHLY EYEWASH/DELUGE SHOWER INSPECTION CHECKLIST
ANNUAL LABORATORY SAFETY INSPECTION CHECKLIST**

LABORATORY CHEMICAL SAFETY CHECKLIST

Room: _____ Building: _____
 Inspection Date: _____ Dept: _____
 Inspected By: _____

<u>GENERAL</u>	<u>YES</u>	<u>NO</u>	<u>N/A</u>
1. Emergency phone numbers and procedures are posted.	_____	_____	_____
2. Appropriate warning signs are posted on doors.	_____	_____	_____
3. Written Chemical Hygiene Plan is located in the department.	_____	_____	_____
4. All personnel know how where the M/SDS's are located.	_____	_____	_____
5. All personnel have received Lab Safety training.	_____	_____	_____
6. Signs noting the location of the first-aid safety equipment are visible.	_____	_____	_____
7. Lab coats are available.	_____	_____	_____
8. Chemical protective gloves are available.	_____	_____	_____
9. Safety glasses/goggles are available.	_____	_____	_____
10. An approved fire blanket is present and kept in an accessible location.	_____	_____	_____
10. An emergency eyewash station is present and tested.	_____	_____	_____
11. An emergency shower is present and is tested.	_____	_____	_____
12. Refrigerators/freezers are clearly labeled for the type of storage. Those used for storing chemicals should be labeled "NOT FOR STORAGE OF FOOD."	_____	_____	_____
13. Food and Beverage are not stored or consumed where they may become contaminated.	_____	_____	_____
14. Good housekeeping prevails and aisles are uncluttered without tripping hazards.	_____	_____	_____
15. Chemical spill kits are available.	_____	_____	_____
16. Non-contaminated sharp objects in labeled, puncture-proof containers.	_____	_____	_____
17. Fume hoods are tested annually for adequate airflow.	_____	_____	_____
18. All exit ways are clear and unobstructed.	_____	_____	_____
19. Fire extinguishers are available and unobstructed.	_____	_____	_____
20. There are ground fault circuit interrupters (GFI's) on electrical outlets near sinks.	_____	_____	_____
21. Fire extinguishers have service tag and are sealed.	_____	_____	_____
22. The location of the master electrical and gas shut-off controls are clearly labeled and accessible.	_____	_____	_____

23. Current inventory of chemicals is available. _____

<u>CHEMICAL STORAGE AND HANDLING</u>	<u>YES</u>	<u>NO</u>	<u>N/A</u>
1. Gas cylinders are properly secured.	_____	_____	_____
2. No leaking containers are present.	_____	_____	_____
3. All chemical containers are properly labeled.	_____	_____	_____
4. Chemicals are stored according to compatibility.	_____	_____	_____
5. Cabinets and open shelves are equipped with lips or barriers to prevent spilling of chemicals and protect containers from falling.	_____	_____	_____
6. Peroxide forming reagents are dated when opened.	_____	_____	_____
7. Gas outlets and burners are maintained in safe working condition.	_____	_____	_____
8. Peroxide forming reagents are disposed of or tested after exp. date.	_____	_____	_____
9. Flammable storage area(s) is labeled.	_____	_____	_____
10. Flammable liquids not stored outside of a storage cabinet in excess of 10 gallons.	_____	_____	_____
11. Flammables are kept away from sources of heat, ignition, flames, etc.	_____	_____	_____
12. Flammable liquids are not stored in refrigerators, unless the refrigerator is certified as explosion-proof.	_____	_____	_____
13. Corrosive chemical storage area(s) is labeled.	_____	_____	_____
14. Corrosive materials are stored on the lower shelves.	_____	_____	_____
15. Cal/OSHA carcinogen storage area(s) is labeled.	_____	_____	_____
16. Chemicals in the open are kept to a minimum.	_____	_____	_____
17. Flammable/Combustible liquids do not exceed NFPA storage limits.	_____	_____	_____
18. Flammable/Combustible liquids are stored in approved cabinets.	_____	_____	_____
19. Poisonous gases are not present.	_____	_____	_____

<u>CHEMICAL WASTE</u>	<u>YES</u>	<u>NO</u>	<u>N/A</u>
1. Hazardous waste containers are labeled and have closed lids.	_____	_____	_____
2. Hazardous waste labels are complete.	_____	_____	_____
3. Hazardous wastes are not stored beyond their expiration date.	_____	_____	_____

COMMENTS: _____

MONTHLY EYEWASH/DELUGE SHOWER INSPECTION CHECKLIST

NOTE: The eyewash/deluge shower must be inspected at least monthly (CCR Title 8, Section 5162). Maintain a copy of this completed form at the department and submit the original to the Chemical Hygiene Officer by the first day of each month. (S = Satisfactory and U = Unsatisfactory)

SITE: _____ **DATE:** _____

WORK AREA: _____ **INSPECTOR:** _____

<u>S</u>	<u>U</u>	<u>COMMENT</u>
<input type="checkbox"/> Eyewash/deluge shower clearly identified.	<input type="checkbox"/>	_____
<input type="checkbox"/> Eyewash nozzle shields are in place and in good condition.	<input type="checkbox"/>	_____
<input type="checkbox"/> Access to eyewash/deluge shower is not obstructed.	<input type="checkbox"/>	_____
<input type="checkbox"/> Eyewash water flow remains on without the use of operator's hands.	<input type="checkbox"/>	_____
<input type="checkbox"/> Deluge shower water flow remains on without the use of operator's hands.	<input type="checkbox"/>	_____
<input type="checkbox"/> Eyewash water flow remains on until intentionally shut off.	<input type="checkbox"/>	_____
<input type="checkbox"/> Deluge shower water flow remains on until intentionally shut off.	<input type="checkbox"/>	_____
<input type="checkbox"/> Eyewash activation/line flush test.	<input type="checkbox"/>	_____
<input type="checkbox"/> Eyewash water flow rate is 3 gpm minimum.	<input type="checkbox"/>	_____
<input type="checkbox"/> Deluge shower activation/line flush test.	<input type="checkbox"/>	_____
<input type="checkbox"/> Deluge shower water flow rate is 30 gpm minimum.	<input type="checkbox"/>	_____
<input type="checkbox"/> General condition of eyewash/deluge shower.	<input type="checkbox"/>	_____

OTHER ITEMS IDENTIFIED BY INSPECTOR BUT NOT LISTED ABOVE

<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____

COMMENTS: _____

ANNUAL LABORATORY SAFETY INSPECTION CHECKLIST

Building: _____ Department: _____ Date: _____

Inspector: _____ Room: _____ Mail Code: _____

Job Title: _____ Phone: _____

Yes	No	n/a	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is there a Chemical Hygiene Program present?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are personnel trained in chemical health/physical hazards and laboratory safety?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Do lab personnel have access to and are familiar with the use of Material/Safety Data Sheets (M/SDSs)?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have personnel using biohazards, toxins, and regulated carcinogens been given documented special training?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are personnel instructed in emergency procedures (exits, location, and use of fire extinguishers, medical)?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have personnel been instructed on how to respond in the event of a chemical spill?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are complete training records and documents available for review by the Personnel Office and outside agencies?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have all hazards identified by the annual survey been abated? (Action records must be retained.)
Yes	No	n/a	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are rooms and cabinets containing regulated carcinogens, biohazards, and radioactive materials labeled?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are work areas clean and uncluttered?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Do employees know the location of the first aid kit and is it accessible?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is equipment greater than 5 feet tall seismically secured to prevent tipping during an earthquake?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Do shelves have lips, wires, or other seismic restraints to prevent items from falling?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are food and beverages kept away from work areas and out of laboratory refrigerators or cabinets?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are fire extinguishers accessible and charged? (If not, please call Physical Plant Services.)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have personnel been instructed on the hazards of wearing contact lenses in the laboratory?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are protective gloves available and worn for laboratory procedures where skin absorption/irritation may occur?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are safety glasses or other eye protection available and worn in the laboratory?

<u>BIOSAFETY CABINET</u>			
Date of last inspection:			
Types of regulated carcinogens:			
Types and quantity of compressed gasses:			
Gallons of flammable liquids:			
Types of personnel protective equipment:			
<u>LABORATORY EQUIPMENT</u>			
Yes	No	n/a	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have chemical fume hoods been tested within the past year?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is storage in hoods kept to a minimum and is it placed so it does not impede proper airflow?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Does fume hood draw air (test with a tissue on hood edge) and is alarm installed and working?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is the lab ventilation negative with respect to corridors and offices?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are refrigerators and freezers, which are used for storage of flammables, spark-proof and properly labeled?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are all gas cylinders restrained to prevent tipping or falling?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are valves of gas cylinders capped when not in use?
<u>HAZARDOUS MATERIALS</u>			
Yes	No	n/a	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are chemicals labeled to identify contents and hazards with dated labels?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are regulated carcinogens handled safely to reduce employee exposure?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are chemicals separated by hazard class and stored to prevent spills (acids, bases, oxidizers, flammables, etc.)?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are chemicals inventoried (chemical name, quantity on hand)?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are chemical wastes properly segregated and stored with Waste Pick-up Tags attached to the containers?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are all hazardous wastes disposed of and not poured into the sewer system?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is a plumbed emergency eyewash station available within 100 feet of all areas where chemicals may splash onto an employee's body?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is a plumbed emergency eyewash station available within 100 feet of all areas where chemicals may splash or mechanical hazards such as grinding?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are ether and other peroxide formers dated?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are sharps stored in puncture-proof containers and labeled appropriately (infectious waste or hazardous waste)?
<u>FIRE AND ELECTRICAL SAFETY</u>			
Yes	No	n/a	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are fire doors unobstructed and readily closeable?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	If greater than 10 gallons of flammables are stored, is an approved flammable storage cabinet used?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are flammable liquids stored in 4-liter quantity bottles or less?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are flammable liquids limited to 60 gallons per fire area?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are plugs, cords, and receptacles in good condition (no splices or frayed cords)?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is all equipment properly grounded?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are extension cords used? (These are not to be used in place of permanent wiring, running through walls, ceilings, doors, etc.)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are all electrical boxes, panels, receptacles, and fittings covered to protect against electrical shock?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are control switches, circuit breakers, electrical panels, and emergency power cabinets free of obstructions?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are circuit breakers labeled to indicate what equipment is served by each?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have all outlet adapters been removed? (Install additional outlets or use fused power strips if current demand is within the strip's rating.)
EYEWASH/DELUGE SHOWER			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash/deluge shower clearly identified
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash nozzle shields are in place and in good condition
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Access to eyewash/deluge shower is not obstructed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash water flow remains on without the use of operator's hands
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Deluge shower water flow remains on without the use of operator's hands
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash water flow remains on until intentionally shut off
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Deluge shower water flow remains on until intentionally shut off
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash activation/line flush tested
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Eyewash water flow rate is 3 gallons per minute minimum
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Deluge shower activation/line flush tested
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Deluge shower water flow rate is 30 gallons per minute minimum

COMMENTS: _____

APPENDIX E
COMMON LABORATORY CHEMICALS
STORAGE CONDITIONS & DISPOSAL GUIDELINES

DISPOSAL PROCEDURES

GENERAL PROCEDURES

As stated in prior sections, all hazardous substances should be stored, handled and used in accordance with the information provided by the manufacturer through container labeling and Material/Safety Data Sheets. In addition, there are reference sources that can provide general safety precautions for storage and use of both specific chemicals and general categories of hazardous materials. Some of these sources are:

Safe Storage of Laboratory Chemicals

by David A. Pipitone

John Wiley & Sons, New York, NY

Prudent Practices for Handling Hazardous Chemicals in Laboratories

National Academy Press, Washington, D.C.

Hazardous Waste Management at Educational Institutions

National Association of College & University Business Officers

Washington, D.C.

Managing Safety in the Chemical Laboratory

Dux/Stalzer

Van Nostrand Reinhold, New York, NY

Flammable, Corrosive and Toxic substances constitute a large portion of the hazardous materials commonly found in school District facilities.

DISPOSAL PROCEDURES

INTRODUCTION

Disposal of Hazardous Waste is a major concern of any entity that purchases and uses hazardous substances. As these substances are used, waste is generated and must be removed for proper disposal. The two major concerns of hazardous waste generators are the cost of such disposal and governmental regulations pertaining to proper disposal. If you have been involved in waste disposal in the past, you already have a feel for the high costs and tedious procedures involved.

SELF DISPOSAL

To help mitigate the costs involved with hazardous waste disposal, the user should be aware that many chemicals can be self-disposed. Information on which chemicals can be self-disposed can be obtained from the chemical manufacturers, Material/Safety Data Sheets, and several other publications. Examples of some disposal reference resources are:

- ◆ "Prudent Practices for the Disposal of Chemicals from Laboratories", National Academy Press, Washington D.C.
- ◆ "Hazardous Waste Management at Educational Institutions", NACUBO, Washington, D.C.
- ◆ "Catalog Handbook of Fine Chemicals", Aldrich Chemical Company, Inc., Milwaukee, Wisconsin
- ◆ "Chemical Catalog/Reference Manual", Flinn Scientific, Inc., Batavia, Illinois

Sources 3 & 4 are catalogs from chemical suppliers and are not an endorsement to buy from these suppliers, but rather an example showing that there are suppliers concerned about proper disposal. You should look at the overall cost of using chemicals from the "cradle to the grave", just not the purchase cost. If a supplier is willing to provide you with self-disposal guidelines, smaller containers, M/SDS's, properly labeled containers and other help, you should consider this as a means of reducing your overall cost, even if the purchase cost is greater.

Although self-disposal may reduce your disposal cost, it may increase your exposures to Environmental Liability, General Liability, Workers Compensation, and Property Damage. Top management and administrators should carefully weigh the advantages and disadvantages before committing to a self-disposal program.

After the pros and cons of self-disposal have been thoroughly reviewed and a decision to implement self-disposal is made, then the following conditions are essential for safe and effective disposal:

- ◆ Disposal of small amounts only.
- ◆ Provide adequate training to persons involved in such disposal, placing emphasis on proper procedures and on methods of protecting the workers and property.

- ◆ Provide proper personal protective equipment for persons involved in the disposal. Ensure that the individuals are trained in the use of the protective equipment and enforce the use of such equipment.
- ◆ Provide all appropriate emergency equipment such as eye wash stations, deluge showers, spill kits and proper fire extinguishers.
- ◆ Ensure that disposal areas have adequate ventilation including, where necessary, local removal ventilation such as a fume hood.
- ◆ Enforce all Federal, State and local regulations regarding disposal of hazardous materials.

USE OF DISPOSAL SPECIALISTS

If the decision is to not self-dispose, but to use a disposal specialist, there are numerous considerations besides costs that must be reviewed. Some things to check for are:

- ◆ Appropriate EPA licenses
- ◆ Appropriate State waste hauling licenses
- ◆ Certificates of insurance for General Liability, Environmental Liability, Completed Operations or Professional Liability, Auto, or Fleet coverage and Workers Compensation.
- ◆ Written assurance that you will receive disposal certificates, manifests and bills of lading to ensure that disposal is properly completed.
- ◆ Company background, financial stability and references

To obtain a quote from a disposal specialist, the specialist will need to know:

- ◆ what chemicals are to be disposed
- ◆ the number, size and type of containers in which the chemicals are stored.
- ◆ the number and size of containers having unknown substances.

Remember that you as the waste generator are responsible for the waste disposed. That is why it is extremely important to utilize a reputable disposal firm. Should you have any questions regarding disposal firms or desire any recommendations please contact the Risk Management Division of Keenan & Associates.

GENERATOR ID NUMBER

Before hazardous waste can be disposed, a Generator Identification number must be obtained. To obtain this number contact the State Department of Health Services or the Environmental Protection Agency.

APPENDIX F

LABORATORY FUME HOOD SURVEY FORM

LABORATORY HOOD SURVEY WORKSHEET

Survey Conducted By:		Location:	
Date:		Hood No.:	
Temperature:		Pressure:	Equipment:

↑
Opening

|

Dimension

↓

1/	2/	3/	4/
5/	6/	7/	8/
9/	10/	11/	12/
13/	14/	15/	16/

-

-

-

-

-

-

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-

Indicate sash position for required average face velocity (conduct and record initial test with sash fully open).

No.	Velocity	No.	Velocity	Calculations
1		9		No. of Measurements:
2		10		Total (summation) of Velocities:
3		11		Average Velocity: lfm (Total No.)
4		12		Velocity Correction Factor: N/A
5		13		Corrected Average Velocity: N/A
6		14		Face Area: ft. ²
7		15		CFM = (Avg Vel:) x (Area:)
8		16		= CFM

Comments/Observations: These values were taken with Laboratory Hood sash (i.e. door) opened to _____ inches. Baffle setting–Normal

APPENDIX G

OPERATION OF LABORATORY FUME HOODS

Operation of the Fume Hoods:

The following is a list of general guidelines for safe, effective hood usage: Topic	Guideline
Hood Operation	The fume hoods are equipped with variable air volume controls, which mean that when the sash is lowered, the air flow is low and when the sash is raised, the air flow is increased to the optimum velocity for efficient operation.
Low flow alarm	The hood is equipped with a monitor that continuously monitors the air flow and will sound an alarm if the air flow falls too low. If this occurs, immediately stop all chemical work, close chemical containers, lower the sash and contact Facilities at extension 3227. OSHA regulations require that lab personnel have a means to verify that the hood is operational. This low flow alarm is the device to provide you this verification.
Sash Height	The Sash should always be kept in the lowest possible position, thus minimizing the Face opening and exposure potential. Never work with chemicals with the sash raised above the sash stop. The sash stop can be temporarily bypassed when moving large apparatus in and out of the hood.
Air flow alarm silencing	If the sash is raised above the sash stop, the monitor will detect low flow and the alarm at the hood will sound. You can silence the alarm temporarily by pressing the acknowledgement button. This will allow you to complete apparatus set up in the hood. Be sure to lower the sash below the stop when set up is completed, and push the reset button to reset the low flow monitor.
Working Distance	To avoid turbulence at the sash edge and to allow for greater protection, keep your work at least 6 inches back from the edge of the sash.
Hood Housekeeping	Since objects placed in the hood affect air flow, it is important not to clutter up a hood with extraneous items. Do not place large items in front of the baffles at the rear of the hood.
Chemical Disposal	Hoods should not be regarded as a means for chemical disposal. Apparatus in hoods should be fitted with condensers, traps or scrubbers to contain and collect waste solvents, toxic vapors or dusts, before the exit gases are released into the hood system.

Chemical Storage	Hoods are not to be used for chemical storage, except for the hoods dedicated to chemical waste storage.
Ignition sources	Items such as hot plates, controllers, open flame devices and electrical connectors must be certified, and labeled, as being intrinsically safe for operation within a laboratory hood.
Inside the hood	Your head should never cross the plane of the hood sash when you are dismantling equipment or at any other time.
Chemical Spills	Clean up incidental chemical spills immediately using the spill clean-up supplies provided in the lab.
Completion of work	Lower the sash to the closed position when hood is not in use.

APPENDIX H

INCIDENT REPORTING

Incident Report

Student's

Name_____Date_____

Course_____

Experiment_____

What

happened_____

Room location_____

Action

Taken/Recommended_____

Preventative

Measures_____

Student Witnesses

Faculty Involved

Signature (of reporter) _____

APPENDIX I
COLD ROOM PARTICIPANT

Cold Room Laboratory Participation Contract

I, _____ the undersigned, acknowledge, appreciate and agree that:

1. There are inherent risks involved with participation in laboratory activities, and I choose to voluntarily participate with full knowledge that said may potentially be hazardous to me. I agree to follow the safety procedures outlined above and all instructions of my instructors. I understand that I may be forbidden from participating in the laboratory session and future laboratory courses if I violate any safety rule or procedure.
2. I voluntarily assume full responsibility for any risk of personal injury, including death, which may be sustained by me as a result of my participation. There may also be other risks which are not fully known or readily apparent.
3. I hereby release, waive, and discharge College of the Canyons and its Board of Trustees, its officers, agents, employees and representatives from all claims, demands, liabilities, rights and causes of action of whatever kind or nature, that may result from or occur during my participation, whether caused by negligence of the College, its Board of Trustees, officers, agents, employees or representatives or otherwise. I also agree to indemnify and hold harmless the College for any loss, liability, damage or costs, including court costs and attorney's fees that may occur as a result of my negligent or intentional act or omission while participating in this course.

I HAVE CAREFULLY READ THIS RELEASE OF LIABILITY AND ASSUMPTION OF RISK AND HAVE HAD SUFFICIENT TIME TO SEEK EXPLANATION OF THE PROVISIONS CONTAINED ABOVE. AFTER CAREFUL CONSIDERATION, I SIGN THIS DOCUMENT **VOLUNTARILY AND WITHOUT ANY INDUCEMENT**.

Print Name _____ Signature _____

Date _____

APPENDIX J

**HEALTH INSURANCE PORTABILITY AND
ACCOUNTABILITY ACT (HIPAA)**

Health Insurance Portability and Accountability Act (HIPAA)

In 1996 Congress passed the Health insurance Portability and Accountability Act (HIPAA). Many provisions became effective in 1997 and we've already implemented them. One of such provision, Health Care Portability, focused on protecting workers who changed jobs against loss of health insurance coverage or from being subject to new health insurance coverage exclusions for pre-existing conditions.

The HIPAA Administrative Simplifications provisions now must be implemented. Administrative Simplification includes the following regulations: Standard Transactions and Code Sets, Privacy, Security, and Unique Identifiers. The purpose of these regulations is:

- To reduce administrative costs through standardization.
- To improve the effectiveness and efficiency of the health care system by standardizing the electronic transmission of health information.
- To guarantee the security and privacy of individually identifiable health information.

Who must comply with HIPAA?

HIPAA requires health plans, health care clearinghouses, and those **health care providers** who transmit health information in electronic format to comply with HIPAA Administrative Simplification.

- Health plans can be individuals or group health plans that provide, or pay the cost of medical care.
- Health care clearinghouses are entities that convert transactions received from other entities that convert transactions received from another entity from nonstandard format to standard format (or vice versa).
- Health care providers include all providers of medical or health services who transmit health information electronically.

ANY INDIVIDUAL INVOLVED WITH HEALTH INFORMATION MUST COMPLY. THIS INCLUDES STUDENTS, DOCTORS, CLINICAL, AND BASIC SCIENCE FACULTY, WHO HAVE CONTACT WITH ANY INDIVIDUALS' HEALTH CARE INFORMATION.

THIS APPLIES TO LIVING PATIENTS AND TO HUMAN CADAVER DONORS.

Privacy:

The HIPAA privacy regulation generally limits the use or disclosure of protected health information to a minimum necessary standard. It also gives members the right to see and receive copies of their records, request amendments to their records, and learn details of certain disclosures of the records.

The compliance date for the HIPAA privacy regulations was April 14, 2003. For more information, please visit the U.S. Department of health & Human Service Administrative Simplification web site <http://aspe.hhs.gov/admsimp/>

By signing below, you certify that you have read above, and understand that information about cadavers (as with information about living patients) is **CONFIDENTIAL**. You agree not to discuss this information in public.

Print Name: _____

Signature: _____

APPENDIX K
STUDENT INJURY INSTRUCTIONS

IN CASE OF STUDENT INJURY

For a Minor Injury or Illness During the Day:

Send student to Health Center located in STCN-122 (Valencia) or Quad 1-B Room 109 (CCC). Have a second student accompany them. Fill out an incident report form found in drawer of instructor's desk. Please give completed form to the laboratory technician.

Health Center hours vary each semester:

Call extension 3259 (Valencia) or 3812 (CCC) for more information

For a Minor Injury or Illness in Evening:

Notify Campus Safety at ext. 3229. They will take a report and notify a night administrator. Please fill out our department incident report found in drawer of instructor's desk. Give completed form to the laboratory technician.

For Injury or Illness requiring Emergency services:

Call the switchboard operator by dialing 7 (Valencia) or 77 (CCC) from the classroom phone. The operator will in turn notify 911 Emergency services, security will direct them to you when they arrive on campus, and the Health Center will send the nurse.

APPENDIX L

BIOLOGICAL SCIENCES, CHEMISTRY, PHYSICAL SCIENCES, and ENVIRONMENTAL SCIENCES AGREEMENT

Agreement:

I have read and agree to follow the above safety rules for the (CIRCLE ONE:)
Biological Science/Chemistry/Physical Science/Environmental Science Laboratories.
I realize that I must obey these rules to ensure my own safety and that of my fellow
students and instructors.

Student Signature

Student Name (print)

Date

Agreement:

I have read and agree to follow the above safety rules for the (CIRCLE ONE:)
Biological Science/Chemistry/Physical Science/Environmental Science Laboratories.
I realize that I must obey these rules to ensure my own safety and that of my fellow
students and instructors.

Student Signature

Student Name (print)

Date

APPENDIX M

**BIOLOGICAL SCIENCES/CHEMISTRY/PHYSICAL
SCIENCES/ENVIRONMENTAL SCIENCES
LABORATORY SAFETY GUIDELINES**

College of the Canyons
Biological Science/Chemistry/Physical Science/Environmental Science Departments
Laboratory Safety Guidelines

Each laboratory is a restricted area. Enrolled students may work in a lab only when there are authorized personnel present. Friends of students in lab classes will not be allowed to “visit” inside the laboratory. Students are not permitted into the storage rooms or prep areas unless given specific permission by their instructor or lab personnel.

Ensuring safety in the laboratory is the responsibility of everyone working in the lab. Please follow these guidelines carefully.

GENERAL GUIDELINES

1. USE COMMON SENSE WHEN WORKING IN THE LAB.
2. Be prepared for your work in the lab. Read all procedures thoroughly before entering the lab. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
3. Do not eat, drink or smoke in the lab. Do not use laboratory glassware as containers for food or beverages.
4. Always wear close-toed shoes in the lab.
5. Wear safety goggles whenever working with chemicals or when there is an impact risk.
6. Long hair should be tied back when working with flames, chemicals or dissections.
7. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times. Keep aisles clear. Push your chair under the desk when not in use.
8. No open flames are permitted in the laboratory unless specifically indicated by the instructor. When burners or hot plates are being used, caution should be exercised to avoid thermal burns. If you sustain a thermal burn immediately flush the area with cold water and notify the instructor.
9. If there is a blood spill, immediately notify the instructor.
10. ANY ACCIDENTS OR INJURIES THAT OCCUR IN THE LAB MUST BE REPORTED TO THE INSTRUCTOR AT ONCE.
11. Familiarize yourself with the location of the Fire Extinguisher. There is a telephone in each lab room for EMERGENCY use only. In case of emergency, dial 7 (Valencia) or 77 (CCC) to reach the school operator who will contact and direct the emergency personnel.
12. Broken glass is to be disposed of in the broken glass container and reported to the instructor.
13. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments. Clean, rinse and wipe dry all work surfaces and apparatus at the end of the experiment. Return all equipment clean to the proper area.
14. Handle all living organisms used in a lab activity in a humane manner.
15. Never use mouth suction to fill a pipet. Use a rubber bulb or pipet pump.
16. When removing an electrical plug from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching an electrical switch, plug or outlet.

HANDLING CHEMICALS

1. Wear safety goggles whenever working with chemicals.
2. Chemicals and biological stains should be used with caution. Follow specific directions regarding all chemicals used during lab. Check the label on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
3. If any chemical comes into contact with your skin, immediately flush the area with water for several minutes and notify the instructor. A strong base feels soapy on your skin but will still cause a severe burn.
4. Familiarize yourself with the location of the chemical eyewash. If any chemical is splashed into your eyes, hold eyelids open and flush with water for 15 minutes. Notify the instructor.
5. Dispose of all chemical waste properly. Do not pour chemicals down the sink unless told to do so by your instructor. Check the label of all waste containers twice before adding your chemical waste to the container.

DISSECTIONS—Special Precautions (BIOLOGICAL SCIENCES only)

1. Students should consult with the instructor regarding the pros and cons of wearing contact lenses during dissections.
2. Safety glasses or other protective eyewear is recommended for all students performing dissections.
3. Protective gloves should be worn during dissections. If your skin comes in contact with a chemical preservative, immediately run water over the area and notify the instructor.
4. Do not remove preserved specimens from the laboratory.
5. Preserved biological materials are to be treated with respect.
6. When using scalpels and other sharp instruments, always carry with tips and points pointing down and away. Notify instructor of any cuts or other injuries.

MICROORGANISMS—Special Precautions (BIOLOGICAL SCIENCES only)

1. When working with microorganisms, lab coats must be worn at all times.
2. The laboratory benches must be cleaned with Sanisol (a disinfectant) before and after all lab work.
3. If cultures are spilled in the lab, they must be disinfected. Pour Sanisol over the spill, let stand for 5 minutes, then wipe up and dispose of towels in a biohazard receptacle.
4. Never remove cultures from the laboratory.
5. When finished working with a specific culture place it in the biohazard receptacle provided.

Agreement:

I have read and agree to follow the above safety rules for the Biological Science Laboratories. I realize that I must obey these rules to ensure my own safety and that of my fellow students and instructors.

Student Signature

Student Name (print)

Date: _____