CSU Channel Islands Chemical Hygiene Plan

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1.0 Policy

It is the intent of California State University Channel Islands to comply with Title 8, California Code of Regulations, §5191, “Occupational Exposure to Hazardous Chemicals in Laboratories”.

2.0 Purpose/Scope

2.1 PURPOSE

This standard is intended to protect laboratory workers and research students (employees and volunteers) from health effects of hazardous chemicals and to ensure that exposures do not reach or exceed acceptable exposure limits. It is designed to provide a comprehensive approach for the protection of laboratory workers.

CI recognizes that Student-Faculty research as a means of teaching as a best practice for student success. All research activity is necessarily instructional if it involves CI students. Given that research is an instructional activity, then the safety of research students in laboratory and field settings in general are the joint responsibility of the faculty, Instructional Support Technicians, EH&S, and the University.

2.2 SCOPE

The Laboratory Safety Standard, officially called Occupational Exposure to Hazardous Chemicals in Laboratories, applies to all University employees, students, and volunteers engaged in the laboratory use of hazardous chemicals, as defined by the standard (Appendix A).

2.3 DEFINITIONS

Chemical Hygiene Plan: A written program developed and implemented by the employer which outlines detailed procedures, controls, personal protective equipment and work practices that are capable of protecting employees from health hazards associated with the presence of hazardous chemicals in the work place.

EH&S: the campus office responsible for development and implementation of the University *Health and Safety Program*.

Laboratory spaces: any space that has been designated for use as a teaching laboratory or as instructional research space.

Lab worker: any individual (faculty, staff, students, volunteers) who is granted access to laboratory spaces.

Faculty: Unit 3 faculty member who mentor, guide, train, and teach other lab workers in laboratory and field spaces.

Instructional Support Technicians (IST): A staff member who is specifically tasked with providing effective technical support for instruction and research activities including safety training, ordering, activity preparation, inventory management, and subsequent chemical or hazardous waste disposal.

Chemical Hygiene Officer (CHO): An employee who is qualified by training or experience to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan.

3.0 Administering Agency

State of California, Division of Occupational Safety & Health (Cal-OSHA)

4.0 References

Prudent Practices in the Laboratory, National Research Council, National Academy Press, Washington DC, 1995.
Title 8, California Code of Regulations, §5191; Occupational Exposure to Hazardous Chemicals in Laboratories.
Title 8, California Code of Regulations, §5209; Carcinogens.
Title 8, California Code of Regulations, §5154.1; Ventilation Requirements for Laboratory-Type Hood Operations.

5.0 Responsibilities

Each person working with or around chemicals, having been trained, is responsible for remaining aware of chemical hazards and handling these materials in a safe manner. If one is unsure of a hazard or proper procedure, they should ask for assistance before use.

	EH&S	Dean	Chair	IST	CHO	Faculty
Oversight, development, implementation, and maintenance of the Chemical Hygiene Plan (CHP).	R	C	C	C	C	C
Conduct annual Chemical Hygiene Plan effectiveness review	R	C	C	C	C	C
Advise and assist in the implementation of chemical hygiene policies and practices, and provide technical assistance in CHP compliance.	R					
Provide consultation, monitoring, and training support services on matters related to laboratory safety.	R					
Monitor employee exposure (as required).	R					
Conduct annual documented laboratory inspections/audits to ensure compliance with the CHP and to identify hazardous operations.	R					
Conduct semi-annual documented laboratory inspections/audits to ensure compliance with the CHP and to identify hazardous operations.				C	R	C
Perform hazard assessment and mitigation in instructional research labs, and of instructional research protocols.	C			C	C	R
Perform hazard assessment and mitigation in instructional labs, and of instructional protocols.	C			R	C	R
Ensure access to appropriate protective equipment.	C			C	R	C
Monitor legal requirements concerning regulated substances.	R					
Define the location of “Designated Areas” where toxic substances and potential carcinogens will be used.	C			C	C	C
Ensure compliance with the CHP.	C			C	R	C
Monitor the procurement, inventory, MSDS repository, and disposal of chemicals in all labs, including identification of chemicals that pose special hazards (e.g. carcinogens, extremely hazardous, pyrophoric etc.).	C			R		I

Provide general safety training to students.	C			R		I
Provide project-specific safety training to students.	C			C		R
Maintain records of general safety training and lab-specific hazard training.	C			R		I
Monitor the appropriate use of chemicals in instructional laboratory spaces.				R		R
Monitor the appropriate use of chemicals in instructional research laboratory spaces.						R
Monitor the appropriate use of chemicals in lab preparation spaces.				R		
Document and respond to safety concerns in laboratories.						R
Document and respond to safety concerns in lab preparation spaces.				R		
Monitor proper functioning and/or servicing of protective equipment and infrastructure.	I			R		
Document laboratory accidents, spills/releases, determine causes of accidents, recommend corrective action, and forward investigation reports in laboratories.	C		I			R
Document laboratory accidents, spills/releases, determine causes of accidents, recommend corrective action, and forward investigation reports in lab preparation spaces.	C		I	R		

R = responsible
C = collaborates with responsible party
I = informed of action

6.0 Standard Operating Procedures

6.1 GENERAL RULES

- Avoid working alone in a laboratory while conducting hazardous procedures.
- Wear appropriate eye protection at all times. Normal prescription glasses are not protective eyewear.
- When working with flammable chemicals, be certain that there are no sources of ignition near enough to cause a fire or explosion in the event of a vapor release or liquid spill.
- Use fume hoods when working with volatile chemicals, dusts, or fumes
- Be aware of chemical hazards as determined from the SDS and other appropriate references.
- Know the location and contents of the chemical hygiene plan
- Appropriate protective equipment should be worn every time you work around/use chemicals.
- Shoes must cover the entire foot (sandals and opened toed shoes are not appropriate)
- Restrain and confine long hair and loose clothing
- Understand appropriate procedures for emergencies, including evacuation routes, spill cleanup procedures and proper waste disposal.
- Know the location and proper use of emergency equipment (i.e. fire extinguishers, eyewashes, showers, etc.).
- Know how and where to properly store chemicals when not in use.
- Use proper personal hygiene practices.
- Know the proper methods of transporting chemicals within the facility.
- Be alert to unsafe conditions and correct or report them as soon as they are detected.
- Do not use damaged glassware, and only use equipment for its designed purpose.
- Practice good housekeeping to minimize unsafe work conditions (i.e. cluttered benches and hoods)
- Do not use laboratory glassware to prepare or consume food
- Do not eat or drink in laboratory
- Do not store food in laboratory refrigerators
- Do not smell chemicals, taste chemicals, or pipette by mouth

6.2 UNATTENDED OPERATIONS

- When possible do not leave procedures unattended.
- If it is necessary to do so, post a notification on the door.
- Provide for containment of hazardous substances in the event of a utility failure (such as cooling water) to an unattended operation.
- Provide for proper ventilation. If possible, conduct the operation in a fume hood with the sash lowered.

6.3 PERSONAL HYGIENE

- Wash promptly whenever a chemical has contacted the skin.
- Avoid inhalation of chemicals; do not “sniff” to test chemicals.
- Wash well with soap and water before leaving the facility; do not wash with solvents.
- Do not eat, drink, smoke, chew gum, or apply cosmetics in the laboratory.
- Do not bring food, beverages, tobacco, or cosmetic products into chemical storage or use areas.

6.4 PROTECTIVE CLOTHING AND EQUIPMENT

- Eye protection must be worn by all persons in laboratories when hazardous chemicals are being used.
- Lab coats must be worn by all persons involved in laboratory activities
- Protective gloves must be available and resistant to the type of chemical in use (refer to SDS).
- Inspect gloves before each use to ensure they are in good condition.
- Wash non-disposable gloves before removal and replace them periodically, or when damaged.
- Wear close-toed shoes in the laboratory, not sandals or other open toed footwear.
- Long hair and loose clothing must be confined.
- Carefully inspect all protective equipment before using. Do not use defective protective equipment.
- Disposable protective clothing should not be worn outside of the laboratory work area.

6.5 HOUSEKEEPING

- Access to emergency equipment, showers, eyewashes, aisles and exits should never be blocked by anything, not even temporarily.
- Keep all work areas, especially laboratory benches, clean and clear of clutter.
- Chemical containers must be labeled with at least the identity and health hazards of the contents.
- All hazardous chemicals should be placed in their assigned storage areas at the end of each workday. Hazardous chemicals must not be left out on benches, desks and shelves.
- Wastes should be properly labeled and kept in their proper containers (see Appendix C).

7.0 Chemical Procurement

All chemical procurement shall be done in accordance with CSUCI “Chemical Procurement Guidelines” (Appendix B).

8.0 Hazardous Waste Disposal

Hazardous material - any material which poses a health and safety threat to employees and/or students or a threat to the environment as a result of improper handling or disposal methods, or accidental discharge.

Chemical Waste - hazardous materials which may have been used in a process or experiment and are contaminated or no longer necessary, or chemical byproducts of a process or experiment that have no further research, equipment or facilities value, which may be disposed.

8.1 HAZARDOUS WASTE DISPOSAL PROCEDURES

- All generators of hazardous waste must have hazardous waste training
- Do not mix incompatible materials.
- Package waste in a sealed container made of a chemically compatible material and store in a cool dry location.
- Secure waste materials against tampering by unauthorized individuals.

- All waste containers must be properly labeled with the California State University Channel Islands Hazardous Waste label (Appendix C).
- It is the responsibility of the waste generator to schedule a waste pickup with their department Chemical Hygiene Officer.
- The waste generator must submit a completed "Hazardous Waste Transfer Form" (Appendix C) prior to the waste pickup. The inventory must include chemical/waste name, amount of waste to be disposed, preparation date and hazard class of the hazardous waste.

For additional hazardous waste disposal information, refer to the California State University Channel Islands "Hazardous Waste Management Procedures" (Appendix C).

8.2 MEDICAL/INFECTIOUS WASTE DISPOSAL PROCEDURES

Refer to campus Medical Waste Management Plan.

9.0 Spills and Accidents

9.1 MINOR CHEMICAL SPILL

A minor chemical spill is one that laboratory personnel can safely handle with the resources locally available; this type of spill has little potential for serious health hazards (i.e. fire, explosion, or chemical exposure). The following minor chemical spill procedures should be used by knowledgeable and experienced laboratory employees only.

- If the spilled material is flammable, turn off all ignition and heat sources.
- Alert people in the immediate area of the spill.
- Notify supervisor immediately.
- Confine the spill to a small area.
- Neutralize or absorb the spilled chemical with the proper clean up equipment/materials.
- Ensure that the proper personal protective equipment is worn during the clean-up (consult SDS).

9.2 MAJOR CHEMICAL SPILL

CI does not have the internal resources to safely contain and clean up a major hazardous chemical spill. The University will contact the Ventura County Fire Department Haz Mat team for responding to hazardous materials incidents. The following steps can be taken, if safe, to help minimize the impact of the spill.

- Evacuate spill area and close doors to the affected area.
- If the spilled material is flammable, turn off all ignition and heat sources (only if safe).
- Send someone to call 911 (from a safe location) and report the conditions to the police.
- Notify department office.

10.0 Hazard Specific Safety Procedures:

10.1 CHEMICAL STORAGE

- Properly segregate incompatible chemicals.
- Keep volatile liquids away from heat, sun, and sources of ignition.
- Corrosives and flammables should be stored below eye level.
- Unnecessary, unused, or outdated chemicals should be disposed.

10.2 PROCEDURES FOR TOXIC CHEMICALS

A chemical is considered toxic if it exerts harmful effects on biological mechanisms.

The SDS's for many of the chemicals used in the laboratory will state recommended limits, OSHA-mandated limits, or both, as guidelines for exposure. Typical limits are threshold limit values (TLV), permissible exposure limits (PEL), and action levels. When such limits are stated, they will be used to assist the Environmental Health and Safety Office in determining the safety precautions, control measures, and safety apparel that apply. For a listing of chemical exposure limits, refer to Title 8, California Code of Regulations, §5155 (Appendix D), "Permissible Exposure Limits for Chemical Contaminants".

When using a chemical with a TLV or PEL value less than 50ppm or 100mg/m^3, or if handling a toxic substance with a high vapor pressure that will be likely to exceed air concentration limits (vapor pressure greater than 1 mm Hg at ambient temperature), the chemical must be handled in an operating fume hood, glove box, or similar device. If none are available, no work should be performed.

- Threshold Limit Values (TLV's): Chemical concentration recommendations developed by the American Conference of Governmental Industrial Hygienists (ACGIH)
- Permissible Exposure Limits (PEL's): Airborne contaminant standards enforced by Cal/OSHA.
- Action level: A concentration for a specific substance that initiates certain required activities (i.e. exposure monitoring and or medical surveillance).

10.3 PROCEDURES/STORAGE FOR FLAMMABLE CHEMICALS

A liquid is considered flammable if it has a flash point of 100 degrees Fahrenheit or lower.

Cabinets designed for the storage of flammable liquids should be properly used and maintained. Read and follow the manufacturer's information and also follow these safety practices:

- Flammable liquid cabinets must be used if greater than 10 gallons of flammable liquids are stored in a laboratory.
- Ensure flammable liquid storage cabinets are properly labeled.
- Chemicals with a flash point below 200°F (93.3°C) should be stored in a flammable solvent storage area or in a designated flammable liquid storage cabinet.
- Place flammable liquid storage cabinets away from sources of ignition.
- Store only compatible materials inside the cabinet.
- Do not store paper or cardboard or other combustible packaging material in a flammable liquid storage cabinet.
- Do not overload a flammable liquid cabinet, follow manufacturers established quantity limits.

10.4 PROCEDURES FOR REACTIVE CHEMICALS

A reactive chemical is one that meets any of the following:

- Identified by the U.S. Department of Transportation (DOT) as an oxidizer, organic peroxide, an explosive class A, B or C;
- It is ranked by the NFPA as a 3 or 4 for reactivity, or
- Is known or found to be reactive with other substances.

Refer to the SDS for known incompatibilities and storage/handling requirements. Some reactive chemicals are temperature sensitive and must be refrigerated.

10.5 CORROSIVE CHEMICALS

A chemical is corrosive if it is aqueous and has a pH of 3 or less or 12.5 or more.
The manufacturers' SDS should include the information on whether the chemical is corrosive.

- Refer to SDS before handling a corrosive chemical.
- The following personal protective equipment should be worn when working with corrosive chemicals: safety goggles, a laboratory apron or laboratory coat.
- Gloves are recommended, when appropriate, and must be tested for absence of pinholes, and known to be resistant to the chemical in use.
- Use proper pouring techniques when pouring acids into water. (i.e. add acid to water).
- All procedures utilizing corrosives must be performed in a laboratory hood.
- Locate the nearest eye wash, and safety shower before handling corrosive chemicals and ensure access is not blocked.

10.6 COMPRESSED GAS CYLINDERS:

- Compressed gas cylinders must be properly secured using chains or cages. Any other method must be approved by the office of Environmental Health and Safety.
- No more than two cylinders may be secured per chain.
- Use two chains if the cylinder is greater than 36 inches high.
- Cylinder caps must remain in place when cylinders are being moved or are not in use.
- Store gas cylinders away from excessive heat.
- Gas cylinders must be properly marked regarding their contents.
- Full and empty cylinders should be stored separately.
- Empty gas cylinders are to be labeled as such.
- Hoses and tubing should be in good condition, free of cracks, and patches.
- Cylinders should be moved with carts equipped with restraining straps and chains.

11.0 Control Measures and Equipment

Chemical safety is achieved by continual awareness of chemical hazards and diligent controls. Laboratory personnel should be familiar with precautionary measures, including the use of engineering controls and other safeguards. Laboratory supervisors should regularly inspect engineering controls and other safeguards, and report all malfunctions to Operations, Planning and Construction at extension 8460.

To ensure the performance of control measures and equipment, periodic workplace inspections and a laboratory ventilation testing program are required to be performed by EH&S.

11.1 VENTILATION

Laboratory employees should understand and comply with:

- Fume hoods should always be used for operations which might result in release of chemical vapors, dusts, mists or fumes.
- A hood or other local ventilation devices should be used when working with any volatile substance. A fume hood must be used when working with a substance that has a PEL or TLV less than 50ppm or 100mg/m^3.
- Fume hoods must be checked annually for proper flow rate. Ensure the fume hood has an inspection tag indicating flow rate, arrow indicating the maximum sash height opening, and the date inspected.
- A flow indicator check should be performed when the system is operating. This consists of taping a small piece of ribbon or tissue at the hood opening and observing whether it indicates airflow.
- Do not extend your head inside the hood when operations are underway.
- The hood fan should be kept on whenever hazardous chemicals are inside the hood.
- In the event of power failure or other hood failure, close any open containers and lower the sash.
- Chemical (or other) storage inside a hood should be minimized.
- The apparatus inside the hood should be placed on the floor of the hood at least six inches away from the front edge.
- Fume hoods should provide an average of 100 linear feet per minute of air flow with a minimum of 70 fpm in any one location sampled. For procedures using carcinogens, 150 fpm is required with a minimum of 125 fpm in any one location.

11.2 EYEWASH FOUNTAINS AND SAFETY SHOWERS

- Access to eyewash fountains and safety showers should not be restricted or blocked in any way.
- Eyewash fountains should be activated monthly to flush the line and verify proper operation. This activity shall be documented.
- Safety showers should be activated annually to flush the line and verify proper operation. This activity shall be documented.

11.3 RESPIRATORS:

The use of respirators is not a primary means by which laboratory exposures to hazardous substances are controlled. Rather, control should rely on proper ventilation and confinement of substances. In some cases, however, respirators may be required to maintain exposures below the PEL. In such cases, the University shall provide the proper respiratory protective equipment to employees in accordance with Title 8, California Code of Regulations, § 5144. Respirators cannot be worn unless one has met the necessary medical criteria and has been fit tested. The University's "Respiratory Protection Program" describes the proper issuance, use, and care of respirators.

11.4 VAPOR DETECTION:

Do not use odor as a means of determining if inhalation exposure limits are being exceeded. Whenever there is reason to suspect that a toxic chemical inhalation limit might be exceeded, whether or not a suspicious odor is detected, notify the supervisor and the EH&S Office (extension 8847). EH&S will determine if engineering controls are available to reduce the exposure and perform exposure monitoring if necessary.

12.0 Procedures/Provisions for additional employee protection

Additional Protection for work with particularly hazardous substances: carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity.

The procedures described in this section shall be followed when performing laboratory work with any select carcinogen, reproductive toxin, or substance that has a high degree of acute toxicity.

The following definitions will apply:

1. Select carcinogen: Any substance capable of causing cancer or described as such in the applicable SDS. Refer to Appendix E for a complete listing of select carcinogens.

   OSHA defines a select carcinogen as any substance that meets the following criteria:

   (i) It is regulated by OSHA as a carcinogen; or

   (ii) It is listed under the category, "known to be carcinogens," in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or

   (iii) It is listed under Group 1 ("carcinogenic to humans") by the International Agency for Research on Cancer Monographs (IARC) (latest editions); or

   (iv) 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/m^3

   (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.
   With regard to mixtures, OSHA requires that a mixture, “shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of

   0.1% or greater, which is considered to be carcinogenic.”

   OSHA requires that a mixture, “shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1% or greater, which is considered to be carcinogenic.

Reproductive toxin: Any substance that may have adverse effects on sexual function or fertility. Chemicals that can cause chromosomal damage, harm to a fetus, or any substance described as such in the applicable SDS.

Acute toxicity: Any substance for which the LD50 data described in the applicable MSDS cause the substance to be classified as a highly or acutely toxic chemical.

12.1 LABORATORY EVALUATION AND DEVELOPMENT OF STANDARD OPERATING PROCEDURES

For laboratories working with chemicals described in section 12.0:

1. EH&S, the CHO, Faculty member or Support Technician, as appropriate, will evaluate those laboratories that utilize chemicals described in section 12.0. Standard Operating Procedures will be developed to minimize the risks of the particular work involving these materials.

   The evaluation will determine:
   - What type of controls are needed.
   - Establish the "Designated Area(s)".
   - If employee monitoring is needed.
   - Need for medical surveillance.
   - Special Training.
   - Personal protective equipment recommendations.

12.2 ESTABLISHMENT OF DESIGNATED AREAS

A "Designated Area" is defined as a hood, glove box, containment cabinet, portion of a laboratory, or an entire laboratory room, designated as the only area where any activity, including storage, of carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity, shall be conducted.

- Conduct all procedures utilizing chemicals in this category in a Designated Area.
- Designated Areas shall be posted as such, and their boundaries clearly marked.
- Access to the Designated Area shall be restricted to trained personnel aware of the potential hazards associated with the materials and all necessary safety precautions.

12.3 USE OF CONTAINMENT DEVICES/PROTECTIVE MEASURES

- Wear appropriate personal protective equipment such as gloves, safety goggles, and lab coat.
- Wear a long sleeved lab coat and gloves known to resist permeation by the chemicals to be used when working in the designated areas.
- Read the SDS for the chemical to be used; know special precautions to be taken.
- Ventilation apparatus such as laboratory type hood shall be tested at least annually, or immediately after ventilation modification or maintenance operations.
- All personal protective equipment, including lab coats, shall be removed prior to exiting the Designated area

12.4 PROCEDURES FOR REMOVAL OF CONTAMINATED WASTE

- Removal of contaminated waste shall be done in accordance with the CSUCI "Hazardous Waste Management Procedures" available in the EH&S Office, or from your division/department CHO.

12.5 DECONTAMINATION PROCEDURES

- Decontaminate the area when work is completed.
- All materials and products shall be decontaminated (or contained) before being removed from the Designated area.
- Hands and forearms shall be thoroughly washed prior to leaving the area, and after completion of any procedure in which chemicals in this classification are used.
- Laboratory work surfaces on which a carcinogen is handled shall be protected from contamination.
- Any equipment, material or other item taken into or removed from a Designated Area shall be done so in a manner that does not cause contamination in non-regulated areas or the external environment.
- Decontamination of jewelry may be difficult or impossible, therefore, it is not recommended that jewelry be worn when working with chemicals in this classification.

12.6 GENERAL PROCEDURES

The following controls and handling techniques should be employed when handling carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity.

- Use the smallest amount of the chemical that is consistent with the requirements of the work to be done.
- Store all chemicals in this category in locked and enclosed spaces.
- Perform all work that may result in the generation of aerosols in a fume hood or glove box designated as a Designated area.
- Mechanical pipetting aids shall be used for all pipetting procedures.
- Dry sweeping and dry mopping are prohibited in a Designated Area.
- Use care when weighing solids to avoid creation of aerosols.
- A current chemical inventory shall be maintained.
- Carcinogen containers must be identified as such.

13.0 Biological Safety

- BIOSAFETY LEVEL 1 - work with microorganisms not known to cause disease in healthy human adults.
- BIOSAFETY LEVEL 2 - work with microorganisms of moderate potential hazard to employees and the environment.

13.1 STANDARD MICROBIAL PRACTICES

Following are standard microbiological practices that apply to all biosafety levels. These practices are common sense principles that protect personnel, the experiment, and the environment. They include the following:

Biosafety Levels 1 and 2:

- Decontaminate work surfaces after use or after any spill of viable materials.
- Eating, drinking, smoking, applying cosmetics, and storing food are prohibited in work areas.
- Use mechanical pipetting devices; mouth pipetting is prohibited.
- Wash hands after handling cultures or animals and before leaving the room.
- Carefully perform all procedures to minimize the creation of aerosols.
- Restrict access to the laboratory when work is being conducted.

In addition to the standard microbial practices listed above, the following practices should be followed when working with or around biological safety level 2 agents/materials:

- Safety cabinets or other appropriate combinations of personal protective equipment and physical containment devices (centrifuge safety cups, sealed centrifuge rotors, containment caging for animals) should be used for the following:
    1. Procedures with a high potential for creating infectious aerosols.
    1. Procedures using high concentrations or large volumes of infectious agents.
- Handle all liquid and solid waste as though infectious
- Dispose of all biohazardous waste in accordance with applicable regulations.
- Wash hands after handling any biohazardous material and before leaving the laboratory.
- Take special care to avoid skin contamination with infectious material; gloves should be worn when skin contact with infectious materials is unavoidable.

14.0 Records

Proper records shall be prepared and maintained to document all activities required by this Standard. These include training, information, inspections/audits, maintenance records for control systems, medical records, exposure records, etc. The responsibility for record retention may reside with either the originating department, EH&S, or in the case of employee exposure or medical records, Human Resources.

15.0 Training

The goal of the training program is to ensure that all individuals potentially at risk are adequately informed about the work in the laboratory/chemical handling area, its risks, how to work safely and what to do if an accident occurs. Every worker should know the location and proper use of personal protective equipment and basic emergency response procedures.

Instructional method(s) to be used are not mandated. A formal session in a classroom setting, informal group, individual discussion with supervisor, posted notices, or handout booklets can all be effective in providing employee training. However, training must be documented on a standard form.

Laboratory technicians are responsible for providing a safety orientation to students; this is not formal "training." The orientation includes, but is not limited to: instructing students to wear safety goggles; instructing students on the mixture of certain chemicals; explaining glassware safety; instructing on how to dispose of hazardous waste; and providing information on safety protocols.

15.1 Training Responsibilities

Procedures for training Laboratory workers are specified in Appendix I. Instructional Support Technicians, Faculty, and the EH&S office share this responsibility.

Laboratory workers shall be provided such information and training when initially assigned to a laboratory where hazardous chemicals are present and also prior to assignments involving new hazardous chemicals and/or new laboratory work procedures. Safety training shall be documented on the Laboratory Safety Training Documentation form (Appendix F).

The Environment, Health and Safety office is responsible for providing faculty and full time employees training on the Chemical Hygiene Plan, for training support for divisions/departments, and for timely facilitation of part of the required training (general initial lab safety) for students performing research; this may be in research sections, in paid status, or as volunteers.

Instructional support technicians (ISTs) are responsible for providing safety training to all student assistants under their supervision within their assigned program. ISTs will communicate to EH&S and the assigned faculty advisor if students enrolled in research sections, volunteering, or being paid for work need initial safety training or annual re-training. They can be asked to coordinate training for other programs on an emergency basis. ISTs will also be the custodian of training records for student safety orientations in classes within their assigned program.

The Chemical Hygiene Officer for the Program or Department is responsible for oversight of laboratory safety training within their division/department.

Laboratory Supervisor or P.I.: The Principal Investigator or Faculty member, in collaboration with ISTs and the CHO, must assess hazards in their instructional research lab, devise reasonable hazard mitigation measures, and convey this information to entities under their supervision.

15.2 Minimum Training Requirements:

- Content and requirements of the Laboratory Standard.
- Content, location and availability of the CHP.
- The exposure limits for hazardous chemicals used in the employee's laboratory(s).
- Signs and symptoms associated with exposures to the hazardous chemicals used in the laboratories.
- Location and availability of SDSs and other reference materials.
- Applicable details of the University's Chemical Hygiene Plan.
- What to do in an emergency
- Hazards unique to the laboratory
- SOPs for extremely hazardous materials (if present)
- Measures employees can take to protect themselves from these hazards, including specific procedures such as engineered controls, work practices, or personal protective equipment.

16.0 Medical Surveillance

Under the OSHA Laboratory Standard, employees should be provided with the opportunity to receive medical attention, including follow-up examinations under the following conditions:

- Where exposure monitoring reveals an exposure level routinely above the action level, or PEL in the absence of an action level, for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements.
- Whenever an employee develops signs or symptoms associated with possible exposure to a hazardous chemical handled in the laboratory.
- After a major chemical release, accident, or incident which may have resulted in an employee being exposed to a chemical.