

CHEMICAL HYGIENE PLAN

California Code of Regulations

Title 8, Chapter 4
Section 5191 *et seq.*

California State University East Bay

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FOREWORD

On January 31, 1990, the Occupational Safety and Health Administration (OSHA) promulgated a final rule for occupational exposure to hazardous chemicals in laboratories. Included in the standard, which became effective on May 1, 1990 is

A CHP is defined as a written program which sets forth procedures, engineering, personal protective equipment and work practices that are capable of protecting employees from the health hazards associated with hazardous chemicals used in laboratories.

This plan is the Chemical Hygiene Plan developed for the College of Science at California State University, East Bay. This CHP is maintained and is readily available to laboratory employees in the College of Science Office and in each laboratory handling chemicals. All laboratory personnel must know and follow the procedures for handling chemicals. All laboratory work involving hazardous chemicals must be planned and executed in accordance with the approved procedures. In addition, laboratory employees must follow the safety and health practices aimed at the reduction of chemical exposures to themselves and

This document was developed to comply with OSHA Title 29, Chapter I, Section 1910.1039 of the Code of Federal Regulations. This CHP will be reviewed, evaluated and updated at least annually and is readily available to employees.

Danika LaDuc

Chief Hygiene Officer

June 10, 2019
DATE

College of Science

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CHEMICAL HYGIENE PLAN (CHP)

CCR Title 8, Chapter 4,
Section 5191 et seq.

May 3, 2019

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- I. Chemical Storage Compatibility

1.0 Standard Operating Procedures for Laboratory Chemicals

1.1 Chemical Procurement

1.1.1 The decision to procure a chemical shall be a commitment to handle and

use the chemical properly from initial receipt to ultimate disposal.

1.1.2 Before a chemical is ordered which has significant hazardous properties and is new to the workplace, the department of Environmental Health and

chemical, the manufacturer, MSDS or SDS, and intended use.

1.1.3 All departmental chemicals shall be received in each individual department

knowledgeable of the proper procedures for receipt. Chemical containers shall not be accepted without accompanying labels and packaging in accordance with all appropriate regulations.

1.1.4 Provide EHS a copy of the MSDS or SDS if it is not already available on

1.2 Chemical Receipt and Storage

1.2.1 Received chemicals shall be immediately moved to the designated storage area. Glass containers of liquids 500 mL or larger shall be placed in

1.2.2 The storage area shall be well ventilated. Liquids shall be placed in

1.2.3 Chemicals shall be segregated by hazard classification and compatibility in a well-identified area, with local exhaust ventilation for volatile

1.2.4 Mineral acids (inorganic acids) shall be separated from flammable and combustible materials

1.2.5 Acid-resistant trays shall be placed under bottles of mineral acids.

1.2.6 Acid sensitive materials stored outdoors shall be covered with a

1.2.7 The storage area shall not be used as a preparation or repacking area.

1.2.8 The storage area shall be accessible only during normal working hours while it is under the control of stockroom personnel.

1.2.9 Storage of chemicals at teaching lab bench or other work areas shall be limited to those amounts necessary for one operation or shift. The container size shall be the minimum convenient. The amounts of chemicals in the workplace shall not be exposed to sunlight or heat. In research labs, relevant chemicals can remain present and accessible for the duration of the research project.

1.2.10 Stored chemicals shall be examined at least annually by a department representative for leaks, corrosion, deterioration, or damage has occurred to the container or the storage facility as a result of leaking chemicals.

1.2.11 Periodic inventories of chemicals in work and research areas shall be conducted by designated staff. Unneeded items shall be properly discarded or returned to the storage area.

1.2.12 Write the receipt date on all chemical containers. Chemicals with degradation properties, e.g. peroxide formers, shall be also be labeled with an expiration or disposal date.

1.3 Chemical Handling

Each laboratory employee with the training, education and resources provided by supervision shall develop and implement work habits consistent with this CHP to minimize exposure of self, others, and the environment to the chemicals in the laboratory. Based on the realization that all chemicals inherently present hazards in certain conditions, exposure to all chemicals shall be minimized.

General precautions shall be followed for the handling of all chemicals:

1.3.1 Skin contact with all chemicals shall be avoided. It is important to have gloves on during chemical transfers and procedures in which

hazardous chemicals are being used. Refer to the chemical compatibility chart

verify with the vendor's Chemical Compatibility Chart. Contact EHS

for additional guidance.

1.3.2. All employees shall wash all areas of skin at risk for chemical exposure

1.3.3. Mouth suction for pipetting or starting a siphon is prohibited.

1.3.4. Eating and drinking in areas where laboratory chemicals are present shall be avoided.

These areas have been clearly identified. Hands shall be thoroughly

1.3.5. Storage, handling and consumption of food or beverages shall not occur in

locations where chemicals are present or stored in unlabeled containers.

Glassware or utensils used for laboratory operations should never be

used to handle food.

1.3.6 Risk determinations shall be conservative in nature.

1.3.7. Any chemical mixture shall be assumed to be as toxic as its most toxic

component.

1.3.8. Substances of unknown toxicity shall be assumed to be toxic.

1.3.9. Laboratory employees are encouraged to be familiar with the symptoms of

exposures to the chemicals with which they work and the

precautions necessary to prevent exposure.

1.3.10. In all cases of chemical exposure, the OSHA Permissible Exposure Limits

(PELs) or the Threshold Limit Values (TLVs) from the American

Conference of Governmental Industrial Hygienists (ACGIH) shall not

be exceeded.

1.3.11. Engineering controls and safety equipment in the laboratory shall be

utilized and inspected in accordance with applicable standards.

1.3.12. Special precautions based on the toxicological characteristics of

chemicals shall be identified and listed in the laboratory

are listed in Section 8.0.

1.4. Laboratory Equipment and Glassware

1.4.1. Laboratory Equipment and Glassware

Each employee shall be responsible for the safe use of laboratory equipment. All chemicals and equipment shall be properly stored and labeled. The work area shall be thoroughly cleaned and all equipment properly cleaned and stored.

In addition, the following procedures shall apply to the use of laboratory equipment:

1.4.1 All laboratory equipment shall be used only for its intended purpose.

1.4.2 All glassware will be handled and stored with care to minimize breakage and cracked or broken glassware will be immediately disposed of in the broken glass container.

1.4.3 When practical, all evacuated glass apparatuses shall be shielded to contain chemicals and glass fragments should implosion occur and related health and physical hazards.

1.4.5 Waste receptacles shall be identified and dated in accordance with Appendix B, Laboratory Waste Collection and Disposal Practices.

1.4.6 Laboratory equipment shall be inspected on a regular basis as required in Appendix A, Laboratory Safety Inspection Objectives and procedures and repaired as necessary.

1.5 Personal Protective Equipment

1.5.1 Safety glasses meeting ANSI Z87.1 are required for employees, students and visitors in the laboratory and will be worn at all times when

working in the laboratory. The following recommendations in the NIOSH Current Intelligence Bulletin #50 are currently followed. Current OSHA recommendations use safety glasses when working with acrylonitrile, methylene chloride (dichloromethane), 1,2-dibromo-3-chloroethane, ethylene oxide (oxirane), and 4,4'-methylenedianiline (MDA). These recommendations are presumably based on best professional judgment, as no specific cases are provided in the preamble to these standards.

1.5.2 Chemical goggles and/or a full-face shield shall be worn during chemical

transfer and handling operations as avoidance or procedures

1.5.5. When hazardous materials are handled, sandals or perforated shoes are discouraged. Bare feet are prohibited. Safety shoes, per ANSI Z41.1 are required when any lifting or handling heavy objects

1.5.6. Lab coats are required for procedures and their use is required whenever orderliness, hygiene or when recommended by the mechanical manufacturer. Lab coats should be laundered on a periodic basis. Lab coats shall be removed immediately upon discovery of significant contamination. If there is potential for significant contamination of the lab coat, use a disposable Tyvek lab coat or Tyvek sleeves and apron.

1.5.5. Students and staff should be encouraged to wear appropriate chemical-resistant gloves based on the table in Appendix C Chemical Compatibility Chart. Gloves shall be worn at all times when there may be skin contact with hazardous chemicals. Replace gloves immediately when they become damaged. Do not use gloves to examine the lab to avoid contamination. Clean your knuckles and faucets. Always wash hands after gloves are removed.

in special cases, specific gloves can be washed and reused. Wash the gloves prior to removal from the hands.

1.5.6. Thermal resistant gloves shall be worn for operations involving the handling of heated or cryogenic materials. Thermal resistant gloves shall be non-reflective and shall be replaced when damaged or contaminated.

1.5.7. Respirator use shall comply with Cal OSHA Respiratory Protection program. For information about this program contact Environmental Health and Safety. This program requires a workplace evaluation, training, a medical exam, and respirator fitting prior to use and annually thereafter.

1.6 Personal Work Practices

1.6.1. Supervisors must ensure that all employees know and understand the rules and procedures established in this plan.

1.6.2 All employees shall remain vigilant to unsafe practices and conditions in the laboratory and shall immediately report such practices and/or conditions to the laboratory supervisor. The supervisor must correct unsafe practices and or conditions promptly.

1.6.3 Long hair and loose fitting clothing shall be confined close to the body to avoid catching fire or being caught in moving machine/equipment parts.

1.6.4 Utilize laboratory fume hoods to avoid contamination of laboratory atmosphere.

1.6.5 Avoid unnecessary exposure to all chemicals by any route.

1.6.6 Do not smell or taste any chemicals.

1.6.7 Encourage safe work practices in work areas by setting and proper example. Horseplay is strictly forbidden.

1.6.8 Seek information and advice from knowledgeable persons, standards and codes about the hazards present in the laboratory. Read operations

1.6.9 Use engineering controls in accordance with Section 3.0:

1.6.10 A pre-use inspection of protective equipment shall be used as procedures dictate equipment prior to use.

1.7 Labeling

1.7.1 All containers in the laboratory shall be labeled. This includes chemical containers and waste containers. Manufacturer's labels shall include contents, hazardous characteristics, and source. Lab-generated labels shall include the chemical name or code (for students only), and the relevant hazard chemical hazards. It is good practice to date chemicals when they arrive and when they are used.

When a hazardous chemical is transferred into a container that is intended only for the immediate use of the employee who performed the transfer

1.7.3 The chemical inventory shall be periodically inspected by a department representative to ensure that labels have not been defaced or removed.

1.7.4 All chemicals left in a container at the end of a work shift must be labeled. No unlabeled containers will be used. At a minimum, the label must have the complete chemical name, primary hazard and physical hazards, hazard words, pictograms, and the name of the supplier.

2.0 Waste Collection and Disposal

Please refer to Appendix B Laboratory Waste Collection and Disposal Practices and Appendix B1 Satellite Accumulation Site Weekly Inspection Log.

2.0 Criteria for Implementation of Control Measures

2.1 Air Sampling

2.1.1 Air sampling for volatile organic compounds and chemical substances

shall be conducted when determined advisable by the Department of Environmental Health and Safety (EHS) or as specified by codes or regulations.

2.1.2 Upon addition of new chemicals or changes in control procedures

additional air sampling will be considered to determine the exposure. Conduct air sampling if there is reason to believe that exposure levels for regulated substances may exceed the action level, or in the absence of an action level, the PEL

2.1.3 Air sampling study results are maintained by EHS.

2.2 Housekeeping

2.2.1 Each laboratory worker is directly responsible for the cleanliness of his or her workspace and jointly responsible for common areas of the

of housekeeping standards.

2.2.2 The following procedures shall apply:

2.2.2.1 All spill materials shall be immediately cleaned and

property unsecured or large spills are necessary are

Plan:

except for items necessary for the work instructed herein performed

2.2.2.3 Work area shall be cleaned at the end of each operation. The entire work

area shall be left clean and hazard free at the end of the working

2.2.2.4 All apparatus shall be thoroughly cleaned and returned to storage upon
completion of usage.

2.2.2.5 All floors, aisles, exits, fire-extinguishing equipment, eyewashes,

showers, electrical disconnects and other emergency equipment
shall remain unobstructed.

2.2.2.6 All labels shall face front.

2.2.2.7 Chemical containers shall be clean, properly labeled, and lids shall be

2.2.2.8 All chemical wastes will be disposed of in accordance with Appendix D

Laboratory Waste Collection and Disposal Practices

2.3 Safety and Emergency Equipment

2.3.1 Emergency telephone numbers, i.e., 9-1-1 have been posted.

2.3.2 Fire extinguishers are available throughout the Science Building. Laboratory

personnel should be trained in the proper use of fire extinguishers. Prior

to the procurement of new chemicals, a department representative shall

verify that existing extinguishers and other emergency equipment are

extinguishers in classrooms, laboratories, and offices are the

department's responsibility. Contact EHS if you need training on how to

2.3.3 All employees who might be exposed to chemical splashes shall be

inspected and flushed monthly. Inspections are done by the Department of Facilities Management (FM). Records are maintained by FM.

2.3.4 Location signs for safety and emergency equipment are posted

3.0 Engineering Controls

The engineering controls installed in the laboratory are intended to minimize

exposure to chemical and physical hazards in the workplace.

These controls must be maintained in a safe and effective condition.

Engineering controls are provided to protect workers from

hazards. Improper function of engineering

controls must be reported immediately. The system shall be taken out of

service until proper repairs have been made.

3.1 Local Ventilation

Each laboratory has air wash vents and exhausts driven by fans. In many labs,

the fume hoods supply much or all of the exhaust function. Each

laboratory has been balanced to maintain a slight negative pressure

relative to the hallway to protect the area from contamination.

Laboratory workers should become familiar with the normal

operating conditions in a lab such that they may note and report

possible changes in balance, indications of inadequate volume

of unusual whirring sounds, odors, or variations of pressure or air

flow, and air flow indicators.

3.2. Laboratory Hoods

The laboratory hoods shall be utilized for all chemical procedures that might

The following work practices shall apply to the use of hoods. For details see

Appendix E - Chemical Fume Hoods.

3.2.1. Confirm adequate hood ventilation performance prior to opening chemical

containers inside the hood. The hood's face velocity should

be a minimum of 100 fpm at the work surface. Work is

indicated by a stopper or yellow arrow. For greater flow rate, the

meter should not be in the red section. An inward flow of air can be confirmed by holding a piece of tissue paper at the face of the hood (or low flow indicator) and observing the movement of the paper.

Immediately report suspected hood fan failures to Facilities

Management and submit a work request online.

3.2.2. DO NOT use a hood with a fan failure. If safe to do so, close all chemical

containers in the lab based on your assessment. This is not an all-or-none situation.

to validate that the airborne concentration is at a safe level.

3.2.3. The insufficient flow alarm can give both false positive and false negatives. Therefore, always confirm adequate flow. A sound/noise

alarm in a working hood can usually be silenced by partially closing

3.2.4. Storage of chemicals and equipment inside the hood shall be kept to a minimum.

3.2.5. Minimize interference with the inward flow of air into the hood.

records are maintained by Facilities Management.

3.2.6.1. Daily inspection of the hood fan function indicator light signals on the roof by the Building Service Engineer.

3.2.6.2. Inspection of belts, fans and motors every 3 months and preventive maintenance performed at least annually.

3.2.6.3. Annually the hood face velocity shall be verified to ensure that the velocity is between 75 and 105 linear ft/min at the working surface height.

3.2.7. The hood shall not be used as a zone of dilution for volatile chemicals.

3.2.8. Prior to the introduction of new chemicals or extreme hazard classes, such ventilation systems shall be determined by a department

Health & Safety:

3.3 Glove Boxes and Isolation Rooms

The need for a glove box or isolation room will be evaluated and determined

when the Chemical Hygiene Permit is completed and evaluated.

3.4 Refrigerators, Freezers, Cold Rooms, and Warm Rooms

3.4.1 Do not store any material which poses risk of fire or explosion upon system failure. Flammables must be stored in a laboratory safe refrigerator.

3.4.2 Freezers or refrigerators utilized in laboratories where chemicals are used

must be certified for use with flammable liquids.

3.4.3 Freezers or refrigerators utilized in laboratories where chemicals are used

must be certified for use with flammable liquids.

degrees F and having a vapor pressure not exceeding 40 PSI absolute at 100 degrees F". Class One liquids are subdivided as follows:

- Class IA Those liquids having a flash point below 73 degrees F and a boiling point at or below 100 degrees F.
- Class IB Those liquids having a flash point below 73 degrees F and a boiling point above 100 degrees F.
- Class IC Those liquids having a flash point at or above 73 degrees F and below 100 degrees F.

potential ignition sources for flammable vapors. Do not store flammable liquids in a refrigerator unless it is approved for such

storage. Flammable liquid approved refrigerators are designed with spark-reducing parts on the inside and/or outside to avoid accidental ignition. Lab Safe or explosion proof refrigerators will be

flammable materials. The refrigerator should be labeled with the words "No food or drinks may be stored in this refrigerator" if not

require a red and white label on the refrigerator door which states:

"WARNING: This refrigerator is not approved for the storage of flammable materials. NO FOOD or drinks may be stored in this refrigerator."

9.5 Storage Cabinets

Storage cabinets for flammable and hazardous chemicals will be labeled as approved by EHS.

4.0 Employee/Student Assistant Information and Training

4.1 Hazard Information

All employees will be informed of the hazards presented by the chemicals in use in the laboratory. Each employee shall receive training at the time of initial assignment to the laboratory, prior to assignments involving new hazards members.

4.2 Training – Faculty and Staff

Training shall include measures that employees can take to protect themselves from chemical, physical and health hazards in the lab. The training shall include:

4.2.1 The contents of the Cal OSHA Laboratory Standard, and its appendices;

4.2.2 The location and availability of the Chemical Hygiene Plan;

4.2.3 Resources which report the permissible exposure limits for Cal OSHA regulated substances or recommended exposure values for other hazardous chemicals not regulated by Cal OSHA which are present in the laboratory;

4.2.4 Signs and symptoms associated with exposure to the chemicals present in the laboratory;

4.2.5 Location and availability of reference material on chemical hazards.

4.2.6 Training shall be conducted and documented by appropriate personnel including supervisors, the CHP Committee members, and staff from Environmental Health and Safety. While verbal training is useful, the use of materials that become part of the training record is

materials. See Appendices F1 – Chemistry Lab Instructor Orientation and F3 – Student Safety in the Chemistry &

4.3. Student Training

4.3.1. At the beginning of each semester, faculty shall familiarize students with the Laboratory in conjunction with the specific College of Science safety procedures:

Appendix F2 – Student Safety in the Biology Lab

Appendix F3 – Student Safety in the Chemistry & Biochemistry Lab
Appendix F4 – Student Safety in the Environmental Lab

4.3.2. At the beginning of each laboratory period, the lab instructor shall review safety concerns pertinent to the experiment to be performed that day. Information that shall include:

- i. hazardous properties of materials to be employed and personal protective measures to be utilized with specific activities
- ii. emergency procedures relevant to potential mishaps with materials and equipment in use, appropriate disposal and cleaning at the conclusion of the experiment

to spot hazards and pitfalls, and to plan for their mitigation in advance. In addition, to emphasize safe thinking, faculty are encouraged to introduce safety questions into test materials.

5.0 Prior Approval of Laboratory Activities

5.1 Permit System

A permit form shall be completed for non-classroom laboratory work including grant work and student laboratory activities that include hazardous operations, working alone, working outside lab hours or carrying out unattended procedures. Appendix G – Chemical Hygiene Permit shall be executed prior to the performance of these activities.

5.1.0 Definition

Hazardous materials – Any material that can cause harm to people, the environment, or property.

Hazardous operations – Any operation using hazardous materials or any other operation with significant potential for causing harm to people, the environment, or property.

5.1.1. Types of Work Procedures requiring a Permit: A. Chemical

1. Ivoiene Permit:

5.1.1.1. Hazardous Operations are not allowed while working alone. All

hazardous operations are to be performed during a time when at least two personnel are present in the laboratory. At no time shall

any person be permitted to work alone in the laboratory, perform

hazardous operations. The determination of hazardous operations

shall be made by the laboratory supervisor. Under unusual

conditions, crosschecks, periodic security guard checks, or other

measures may be taken as deemed appropriate.

5.1.1.2 Working After Hours

Laboratory personnel are not allowed to work alone with hazardous

materials during the day. The work hours for

hours will be determined by the laboratory supervisor. To conduct

hazardous operations after hours, at least two workers approved by the laboratory supervisor must be present.

5.1.1.3 Unattended Operations

Laboratory personnel (continuous operations, overnight operations,

etc.) the following procedure will be used to conduct

5.1.1.3.1 The permit system shall be utilized.

5.1.1.3.2 The laboratory supervisor will review work procedures to ensure for the safe completion of the operation.

5.1.1.3.3 If prudent and appropriate, a sign will be posted at the entrances to the laboratory.

5.1.1.3.4 Precautions shall be made for the interruption of utility service during the unattended operation (loss of water pressure, electricity,

etc.).

5.1.1.2.5. The person responsible for the operation will return to the laboratory

and cleanup of the apparatus.

6.0 Medical Consultations and Examinations

6.0. An opportunity to receive medical attention is available to all employees and students who work with hazardous chemicals in the laboratory. The opportunity will be provided to all employees/students under the following circumstances:

6.1.1. Whenever an employee or student develops signs or symptoms associated with a hazardous chemical to which the employee or student may have been exposed in the laboratory.

6.1.1.1. Employees should immediately report the condition to the Worker's Compensation Coordinator (WCC) if they think they are experiencing signs and symptoms of a chemical exposure. Provide the WCC with the chemical name, amount, and date of exposure. Also notify the Director of EHS immediately. Student assistants are considered University employees.

6.1.1.2. If an employee or student develops signs and symptoms of a chemical exposure while working in the laboratory, the employee or student should immediately report the condition to the WCC and the Director of EHS. Students should report to the WCC for medical follow-up.

6.1.2. Medical surveillance programs will be established where exposure monitoring reveals an exposure level above the action level for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements.

6.1.3. Whenever an event takes place in the laboratory such as a spill, leak, or other hazardous exposure, the employee/student will be provided an opportunity to receive medical attention. The need for medical examination

the employees/students and at a reasonable time and place.

6.3 The medical consultations and examinations shall be administered by or under the direct supervision of a licensed physician. Requests for examinations may be submitted to the Department of Environmental Health and Safety.

7.0 Chemical Hygiene Responsibilities

7.1 Chief Executive Officer

The Dean and Associate Dean of the College of Science have ultimate responsibility for chemical hygiene throughout all laboratories under their direction in the College of Science and will provide continued support for the chemical hygiene plan.

7.2 Department Chair

7.2.1 Each Department Chair in the College of Science is responsible for implementing the Chemical Hygiene Plan in their departments. This pertains to those departments using hazardous materials in the laboratories. All departments are required to comply with the Hazardous Communications Program.

Department meets to review hazards in the lab and discuss safety issues that pertain to that department.

7.2.3 The Department Chair or their designee will participate on the CHP

- review and improve the GHP;
- maintain the regulatory required status of the program with the California Code of Regulation, Title 8, Chapter 4, Section 5101;
- review Laboratory Work Permits;
- request the assistance of EHS to implement the GHP as needed;
- review all lab related injuries and illnesses and communicate to their departments finding and actions of

applicable investigations

appropriate chemical hygiene policies and practices;

7.3.2 Perform regular, formal chemical hygiene and housekeeping inspections including inspections of emergency equipment

7.2.3 Help project directors develop precautions and adequate facilities;

7.3.4 Maintain current knowledge concerning the local requirements of regulated substances in the laboratory,

7.3.5 Maintain overall responsibility for the laboratory operation,

7.3.6 Ensure that employees and students learn and follow the chemical hygiene rules,

7.3.7 Determine the proper level of personal protective equipment, ensure that such protective equipment is available and in working order

7.3.8 Ensure that appropriate training has been provided to employees and students,

7.3.9 Monitor the waste disposal program.

7.4 Laboratory Workers

The laboratory workers are individually responsible for:

7.4.1 Ensure that laboratory operations are in accordance with the Chemical Hygiene Plan;

7.4.2 Develop and maintain chemical hygiene habits

7.5.5 Ensure that

7.5.1 EHS will review implementation of the CHP and verify compliance

7.5.2 EHS will participate on the CHP Committee and provide regulatory updates applicable to work in the laboratories.

7.5.3 EHS will participate in incident investigations

8.0 Special Precautions

When laboratory procedures require the use of hazardous materials with health and/or physical hazards, additional precautions may be required. If necessary, a risk assessment will be conducted to determine if using the permit system (Appendix B - Chemical Hygiene Permit) and will include the following:

Health hazards may include work with chemical sensitizers, mutagens, carcinogens, reproductive toxins (male or female), and teratogens. Extreme physical hazards may include reactivity, explosivity, and/or water reactivity. All questions regarding the use of the permit system should be addressed to the Department Chair or their designee. Contact EHS if additional assistance is required.

8.1 Work procedures and special considerations

8.1.1 Use of chemical compatible gloves to prevent hand contact shall be worn when exposed to allergens or substances of unknown allergenicity.

8.1.2 Chemicals that are reproductive hazards (male or female) and/or teratogenic will be handled in a manner consistent with confirmed satisfactory performance and using protective equipment, as prescribed by the supervisor and Chemical Hygiene Officer, to prevent skin contact.

8.1.3 The supervisor, Chemical Hygiene Officer, and EHS will be notified of spills and other emergency incidents. A physician will be consulted when appropriate.

8.2 Working with Chemicals of Moderate Chronic or High Acute Toxicity (Special Precautions)

8.2.1 Access shall be restricted in areas where these chemicals are stored and/or used. Special warning signs shall be posted at the entrance to these areas and where applicable.

8.2.2 Gloves and long sleeves will be used. Hands and arms will be washed

Immediately after working with these chemicals.

8.2.3 Two people will always be present during work with these chemicals.

8.3 Working with Chemicals of High Chronic Toxicity (Special Precautions)

8.3.1 All transfer and work with these substances shall be in a designated area: a restricted access hood, glove box or portion of the lab.

8.3.2 Approval of the supervisor will be obtained before use.

8.3.3 Vacuum pumps must have scrubbers or high efficiency particulate absolute (HEPA) filters.

8.3.4 Any contaminated equipment or glassware will be decontaminated in the hood before removing them from the designated area.

8.3.5 For small quantity powders, use wet methods for cleanup. If larger quantities need to be cleaned up, use a vacuum with a HEPA filter.

8.3.6 The designated area will be marked with warning and restricted access signs.

8.3.7 Containers will be stored in a labeled, unbreakable, chemical resistant container. The area will be well ventilated and access to the area will be restricted.

8.4 Working with animals while using Chemicals of High Chronic Toxicity

8.4.1 Hazardous materials should be handled in a restricted access hood.

8.4.2 For large scale studies, special rooms with restricted access will be provided.

8.4.3 The substance will be administered by injection or gavage rather than by diet. When diet is used, a caging system under negative pressure or under laminar airflow directed toward HEPA filters will be used.

8.4.4 Procedures will be used to minimize contaminated aerosol from food waste.

- using HEPA filtered vacuum equipment for cleaning;
- Moisten contaminated bedding before removal from cage.

- Mix diets in closed containers in hood.

animal room.

9.0 Recordkeeping

notified as soon as possible.

9.2 Accident reports and related documents will be kept by EHS.

9.3 Exposure records (workplace monitoring) for hazardous chemicals and harmful physical agents will be maintained by EHS for 30 years.

9.4 Medical records for employees exposed to hazardous chemicals and harmful

physical agents will be maintained by the department for the duration of the employee's employment plus 30 years.

9.5 Records of inspections of equipment will be maintained for 3 years by the departments. They will be made available for review by EHS upon request.

9.6 Records of employee training will be maintained for 3 years by the department and EHS.

10.0 Chemical Spills, Releases and Accidents

In the event of a chemical spill, release or other accident, the University will adhere to the procedures outlined in Appendix D – Laboratory Emergency Response Plan.

11.0 References and Recommended Reading

California Code of Regulations Title 8, Chapter 4, Section 5134

National Research Council, Prudent Practices for Handling Hazardous Chemicals in Laboratories, National Academy Press, Washington, D.C. 1994

National Research Council, *Provent Practices for Disposal of Chemicals from Laboratories*, National Academy Press, Washington, D.C., 1963.

Franklin, M. *Safety and Health in the Chemical Laboratory*, Academic Press, 1982.

Manufacturers Chemical Association, Inc., *Guide For Safety In The Chemical Laboratory*, 1963.

Green, Michael F. *Safety In Working With Chemicals*, MacMillan Publishing Co. Inc. 1978.

Pipitone, David A., *Safe Storage of Laboratory Chemicals*, Wiley & Sons, Inc. 1984.

Code of Federal Regulations, 29 CFR, part 1910, subpart Z, section 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories, 1990.

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Revised/Reviewed Date	By	Comments
10/17/2007	Debra Pfeiffer	Revised and updated with changes to align with the current Emergency
5/09/2010	Erin LaRue	Revised with new committee and updates with RSS.
5/0/2010	Lynch Low	Revised for clarity and to reflect current practices

