

Section III: REGULATORY FRAMEWORK

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I. REGULATORY FRAMEWORK

A. THE LABORATORY SAFETY STANDARD

1. Background

The Standard for *Occupational Exposure to Hazardous Chemicals in Laboratories* (commonly known as the Laboratory Standard) was adopted by the California Occupational Health & Safety Administration (Cal/OSHA) Standards Board on February 21, 1991 and became effective on April 24, 1991. The Laboratory Standard is summarized on the following page and the complete text of the Laboratory Standard is available via the EH&S website.

The intent of the Laboratory Standard is to protect laboratory employees from harm due to chemicals. The design of the Laboratory Standard is based on a recognition by OSHA, and other health and safety professionals, that laboratory work is typically different in character from industrial operations in their use and handling of chemicals. In contrast to many industrial operations, laboratory chemical work often involves a relatively large number of chemicals in relatively small scale procedures. In many labs, particularly those involved in research, the character of chemical usage can also change significantly over time to reflect evolving research conditions.

The Laboratory Standard is a performance standard. That is, there are few specific requirements to carry out procedures in a certain way. Specific results are to be achieved, but the manner by which the results are to be accomplished are not mandated. This allows the University administration and lab supervisors to make their own decisions, within the spirit (and limitations) of the Laboratory Standard, to determine the means for worker protection. These policy and procedure decisions are formalized within this written Chemical Hygiene Plan and within the lab-specific variations on campus.

2. Applicability

The Laboratory Standard does not apply to all places where hazardous chemicals are used in experiments and investigations. Labs meeting the following four criteria are subject to the Laboratory Standard:

- Chemical manipulations are carried out on a laboratory scale. That is, chemical containers are of a size that could be easily and safely manipulated by one person.
- Multiple chemical procedures are used.
- The procedures involved are not part of a production process, nor in any way simulate a production process.
- Protective laboratory practices and equipment are available and commonly used.

Clearly, most research and teaching laboratories here at UCSB, meet these criteria and therefore fall under the scope of the Laboratory Standard.

Students in campus teaching laboratories are not employees of the University and therefore do not fall under the provisions of the Laboratory Standard. Although not

legally required to be given the same consideration as employees, it is the judgment of the Chemical Safety Committee that the University, within the spirit of the Lab Standard, is obligated to develop Chemical Hygiene Plans which attempt to provide the same level of protection for students. It is recommended that science departments develop at least one generic lab-specific CHP that addresses the basic health and safety considerations for these labs (templates in Section I may be used to accomplish this). Departmental policies and procedures on such issues as personal protective equipment, waste disposal, emergency response, student supervision, etc. should be formalized in this CHP. It should also be noted that teaching assistants (TAs), faculty and staff who teach in instructional labs are covered by the Lab Standard and therefore need to be included in a Chemical Hygiene Plan.

3. Summary of Standard

The Laboratory Standard contains the following elements. Each of these is addressed within Section I of this manual:

- **Chemical Hygiene Plan (CHP)**— A written plan must be developed to control and minimize chemical exposure in research and instructional laboratories. The CHP must be readily available to affected employees, who need to be oriented to its provisions and relevance to their health and safety. *This document satisfies in part the requirement for a CHP. Individual laboratory supervisors are responsible for developing and implementing lab-specific components of the CHP. See the lab-specific CHP section (blue tab) of this manual.*
- **Responsibilities**— Personnel responsible for implementation of the CHP must be designated, including the assignment of Chemical Hygiene Officers.
- **Employee Information and Training**— The employer shall provide employees with information and training to ensure that they are informed of the hazards in their work area and their avoidance (this manual is part of that effort).
- **Exposure Limits**— Occupational exposure to chemicals must not exceed specified levels.
- **Employee Exposure Determination**— As appropriate, measurements must be taken to verify that exposure limits are not exceeded.
- **Medical Consultation and Examinations**— Employees are entitled to medical attention when a significant chemical exposure is suspected.
- **Hazard Identification**— Material Safety Data Sheets (MSDS) and other reference materials need to be available. Labeling of chemicals is strictly regulated.
- **Control Measures**— Criteria must be established that the employer will use to determine, implement and adequately maintain control measures to reduce employee exposures, including lab ventilation, personal protective equipment, etc.
- **Standard Operating Procedures**— SOPs must be developed, as needed, relevant to safety and health considerations when lab work involves the use of hazardous chemicals.
- **Prior Approval**— Circumstances must be stipulated under which a particular laboratory operation, procedure or activity requires prior approval from the lab supervisor.
- **Particularly Hazardous Substances**— Provisions must be specified for additional employee protection for work with substances such as "select carcinogens", high acute toxicity substances and reproductive toxins.

4. The Laboratory Standard at UCSB

a. Introduction

The UCSB **Policy on Environmental Health and Safety** (Policy P-5400) states:

The University shall maintain as safe and healthy an environment as is reasonably feasible for its students, faculty, staff and visitors by:

- **Conducting its operations and activities in a safe manner to minimize the risks of injury to people and minimize property damage at all locations where University operations and/or activities occur.**
- **Complying with applicable regulations, safety and health consensus standards, and practices generally accepted by experts in the field.**

Given the large diversity and severity of hazards associated with laboratories, clearly the laboratories at UCSB are among the most potentially hazardous work areas on campus. It is therefore the policy of the University to abide by the provisions of the Laboratory Standard and this Chemical Hygiene Plan to as great an extent as is reasonably possible. In this spirit, all employees, students and visitors at the University are obliged to familiarize themselves with this program and follow its provisions as it applies to their work. The specific responsibilities of individuals associated with implementation of the Laboratory Standard are delineated in Sec. III:C.

In addition to the many chemical hazards in laboratories there are, of course, many associated *physical and biological hazards* such as electricity, radiation, high and low temperature operations, infectious organisms, etc. While the Laboratory Standard does not specifically stipulate that these be addressed, it is the intent of this manual, and associated website, to do so given the intention of providing an integrated laboratory safety program. Policies and procedures web-links relative to common laboratory physical and biological hazards are in Section II.

b. Standard Operating Procedures

As touched on in the previous section, the incorporation of Standard Operating Procedures (SOP) into our Chemical Hygiene Plan is a requirement. In the development of this manual, it has been the strategy of Environmental Health & Safety (EH&S) and the Chemical Safety Committee to provide, via this manual, some generalized SOPs for lab supervisors. To a large degree this frees individuals from having to develop numerous SOPs and also provides some measure of standardization of safety practices across the campus. However, given the diverse nature of laboratory work at UCSB, it is still incumbent on individual lab supervisors to develop lab-specific SOPs for operations which they deem are "high hazard." Guidance on when and how to prepare these SOPs are given in Section I.

c. Chemical Hygiene Officers

As noted above, a requirement is for the assignment of Chemical Hygiene Officers. Given the responsibilities assigned to a Chemical Hygiene Officer (Sec. III: C), it is the judgment of EH&S and the Chemical Safety Committee that lab supervisors shall be assigned this designation at UCSB. The term "laboratory supervisor" is used throughout this manual and is synonymous with Chemical Hygiene Officer. Lab supervisor is defined as **"the person responsible for the supervision of a UCSB lab(s) and the employees or students who work there."** This person is generally a faculty member in charge of a particular lab but some departmental labs will be run by a staff member. These individuals have specific knowledge and authority to deal with the hazards involved in their operations and therefore are best suited to implement an effective Chemical Hygiene Plan as detailed herein. Additionally, given their legal definition as "supervisor" they are already responsible for maintaining a safe work environment for

their employees under California law.

B. CHEMICAL-USE POLICIES

1. *Employee Information and Training*

One of the major provisions of the Laboratory Standard - as well as the OSHA Injury and Illness Prevention Program- is a requirement for employee information and training. The employer must convey information to the employee regarding the general and specific occupational hazards identified in the workplace.

Training is required for:

- All new employees
- Employees given new job assignments involving exposure situations for which training has not previously been received
- Whenever the employer is made aware of a new or previously unrecognized hazard for which training has not previously been received

The laboratory supervisor has responsibility for ensuring that personnel have had training on the elements listed below as stipulated in The Lab Standard. They are also responsible for ensuring that training records are maintained. As a service to laboratory supervisors, EH&S regularly offers a three-hour Laboratory Safety Class (or CD-ROM for selected audiences) which addresses and documents most of the training elements listed below. Participation in this program goes a long way toward satisfying training requirements and thereby reducing potential liability. Obviously, this class is quite general and does not cover the specific hazards and associated safe work practices for a particular lab. The lab supervisor is still responsible for seeing that their employees are trained on the **specific** hazards and work practices appropriate for their laboratory.

- Employee rights and responsibilities under the Cal/OSHA Laboratory Standard and other regulations. **[Covered in EH&S Lab Safety Class]**
- The contents of this campus Chemical Hygiene Plan and its relation to the Laboratory Standard. **[Covered in EH&S Lab Safety Class]**
- The contents of the lab-specific Chemical Hygiene Plan, including any Standard Operating Procedures (SOPs) that have been developed. **[Lab supervisor training responsibility]**
- The physical and health hazards of hazardous materials including signs and symptoms of overexposure, particularly those defined as Particularly Hazardous Substances (see Sec. I and Sec. III: B(6)). As appropriate, training can address entire classes of hazardous materials (e.g., carcinogens) rather than individual substances. **[Major classes of chemical hazards are covered in EH&S Lab Safety Class]**
- Appropriate use and maintenance of control measures including engineering controls, personal protective equipment, and work practices. **[Generic control measures covered in EH&S Lab Safety Class]**
- The permissible exposure limits for OSHA-regulated substances. **[Concept covered in EH&S Lab Safety Class]**

- Hazardous materials labeling, storage, and signage requirements. *[Covered in EH&S Lab Safety Class]*
- Use of MSDSs and other informational references and resources pertinent to the lab. *[Use of, and general access to, MSDSs covered in EH&S Lab Safety Class; access to lab-specific MSDSs is the responsibility of the lab supervisor]*
- Hazardous waste minimization and disposal practices. *[Covered in EH&S Lab Safety Class]*
- Spill response and emergency procedures. *[Covered in EH&S Lab Safety Class]*

EH&S Training Programs

A summary of all regularly-offered EH&S training courses, and on-line enrollment procedures, are on the EH&S website. These programs are generally widely advertised on campus to allow for easy enrollment. EH&S also has available for checkout a variety of videotapes and other reference materials which lab supervisors may use to facilitate their training (*see EH&S website*).

2. Hazard Identification

University policies on hazard identification with respect to labeling and Material Safety Data Sheets are as follows:

- Labels on incoming containers of hazardous chemicals are not to be removed or defaced.
- The primary campus access to Material Safety Data Sheets (MSDS) is through the internet, particularly the UC MSDS search engine (“Chemquik”). See EH&S website. Individual labs are encouraged to maintain their own hardcopy files as well.
- For chemical substances developed in University laboratories, the provisions for hazard determination, training and labeling shall be those stated in the Laboratory Standard.

3. Criteria for Establishing Exposure Monitoring

The legally acceptable levels for occupational exposure to many toxic chemicals by inhalation are codified by OSHA in so-called Permissible Exposure Limit (PEL) values (CCR, Title 8, Chapter 4, Section 5155). These values are generally expressed in parts per million (or mg/m³) as determined over an 8-hour time-weighted average (a typical work day). Current PEL values are available upon request from EH&S (x4899).

The University policies on suspected chemical exposure shall be those expressed in the Laboratory Standard:

- University shall ensure that employees’ exposures to such substances do not exceed the permissible exposure limits specified.
- The University policies on initial monitoring, periodic monitoring, termination of monitoring and employee notification of results shall be those stipulated in the Laboratory Standard.

- The tasks of: determining if exposure monitoring is required, performing or supervising exposure monitoring and other related duties shall be the sole responsibility of UCSB Environmental Health & Safety. All suspected chemical exposures on campus shall be reported in a timely manner to EH&S.

In the absence of a PEL value for a chemical(s) suspected in an occupational exposure, EH&S shall determine the appropriate acceptable exposure level (e.g., the Threshold Limit Values published by the American Conference of Governmental Industrial Hygienists). It shall be the determination of EH&S, in consultation with the laboratory supervisor, as to which control measures are required to allow employees to safely and legally continue their work.

4. *Medical Consultation and Examination*

The Laboratory Standard states that: ***“The employer shall provide all employees who work with hazardous chemicals an opportunity to receive medical attention, including any follow-up examinations which the examining physician determines to be necessary, under the following circumstances”:***

- When an employee develops signs or symptoms associated with a hazardous chemical to which that employee may have been exposed
- Where exposure monitoring reveals an exposure level routinely above the action level or PEL for an OSHA-regulated substance
- Whenever an event takes place in the work area such as a spill, leak, or explosion resulting in the likelihood of a hazardous exposure

To comply with the above requirements, the University has established the following policies and procedures, when it is known or suspected that an employee (or student) has been exposed to a hazardous chemical(s) or is otherwise injured on campus. More detailed information/procedures are also given in the Emergency Management section of this manual.

- The University policy is that all employees (or students) suffering from chemical exposure or other work-related injury incurred at UCSB shall be evaluated / examined at University expense.
- If the injured /exposed person is safe and able to be transported, escort them to either Student Health Services on campus, Goleta Valley Community Hospital, or their primary physician for evaluation and examination. Contact EH&S at x3194 immediately.
- In some cases a work-related chemical exposure may be suspected but not certain. For example, some low-level but chronic exposures may be difficult to identify or relate to specific symptoms. In these instances, contact the Industrial Hygienist at x8787 to arrange an industrial hygiene review of the circumstances of the suspected exposure.
- The Laboratory Standard includes specific provisions regarding the employer’s exchange of information with the examining physician. It shall be University policy that the provisions of the Laboratory Standard be followed as stipulated in that section.

5. Criteria for Determination and Implementation of Control Measures

The Laboratory Standard states that the CHP".... **shall include criteria that the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals**" Hazard controls are generally classified into three broad groups: engineering controls, administrative procedures and personal protective equipment. The University policies on determination and implementation of control measures are delineated here.

General

- Appropriate control measures shall be implemented in University laboratories to reduce chemical exposures and physical hazards to as low a degree as reasonably achievable.
- Lab supervisors shall determine and implement appropriate control measures.
- Environmental Health & Safety shall be responsible for assisting the above in determining and implementing these control measures. EH&S may do periodic evaluations of control measures on campus as deemed necessary and notify lab supervisors of their results and recommendations.

Engineering Controls—Criteria for Implementation

- **FUME HOODS AND OTHER LOCAL EXHAUST VENTILATION**
 - When using volatile substances that present a significant inhalation hazard
 - When indicated in Standard Operating Procedures
 - As indicated in MSDSs
- **BIOSAFETY CABINETS**
 - With laboratory operations involving biohazardous material as directed by National Institutes of Health (NIH) and Centers for Disease Control (CDC) guidelines and the OSHA Bloodborne Pathogens Standard
 - When stipulated by the Biosafety Authorization issued by the campus Biosafety Committee
 - When indicated in Standard Operating Procedures
- **GLOVE BOXES**
 - When indicated in Standard Operating Procedures
- **STORAGE CABINETS AND SAFETY CANS**
 - When the fire code mandated volume limits for flammable liquids are exceeded
 - When indicated in Standard Operating Procedures

- **FLAMMABLE STORAGE REFRIGERATORS (APPROVED)**

- For storage of any volume of flammable gas or liquid as defined by fire code regulations

Administrative Controls—Criteria for Implementation

The variety of possible administrative controls to reduce hazard levels in laboratories is large. The controls instituted by a given laboratory shall be determined by the lab supervisor in consultation with EH&S, as required. In general, measures shall be implemented:

- As indicated in Standard Operating Procedures
- As necessary to reduce hazards as mandated by current health and safety regulations or as called for by accepted good practice

One administrative control measure which is specifically required by the Laboratory Standard is the incorporation of documented safety training for workers. See sections III: B(1) for a summary of training requirements.

Personal Protective Equipment—Criteria for Implementation

- **EYE AND FACE PROTECTION**

- Safety glasses, goggles, or face shields are to be worn at all times when hazardous work is occurring within the lab
- Safety goggles or face shields are recommended when working with glassware or chemicals under reduced or elevated pressure, or in high temperature situations
- When indicated in Standard Operating Procedures

- **GLOVES**

- When handling corrosive materials, very hot or very cold materials, or whenever protection is needed against chemical exposure
- When indicated in Standard Operating Procedures

- **RESPIRATORS**

- With hazardous materials work for which EH&S has determined that engineering controls may not provide adequate ventilation protection (Note that all respirator usage on campus must be administered by EH&S to be legal under current OSHA regulations.)
- When indicated in Standard Operating Procedures

- **OTHER PROTECTIVE CLOTHING**

- When indicated in Standard Operating Procedures

6. *Particularly Hazardous Substances*

The Laboratory Standard states that: ***"The Chemical Hygiene Plan shall include... provisions for additional employee protection for work with hazardous substances, including "select carcinogens," reproductive toxins and substances which have a high degree of acute toxicity."***

Particularly Hazardous Substances (PHS), as defined in the Standard, are noted below. Web access to lists of these materials are noted in Sec. I.

SELECT CARCINOGENS— In short, it includes carcinogens as listed by the following organizations: OSHA; the National Toxicology Program; the International Agency for Research on Cancer.

REPRODUCTIVE TOXIN— A chemical which affects human reproductive capabilities, including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

HIGH ACUTE TOXICITY SUBSTANCES— Substances such as hydrogen cyanide, hydrogen sulfide, and nitrogen dioxide which may be fatal or cause damage to target organs as a result of a single exposure or exposures of short duration.

It is the judgment of individual laboratory supervisors whether to institute Standard Operating Procedure(s) for using a Particularly Hazardous Substance in their laboratories. See Section I for template forms and instructions, etc.

Some recognized *general* safe work practices for the use of PHS are provided in this manual. For example, a generic PHS standard operating procedure is provided in Section I as a supplement to the lab-specific CHP of all campus labs. Due to its broad application, the information therein is very basic and common sense. However, again, lab supervisors are encouraged to expand upon this basic protocol as needed. These general procedures have been approved by the campus Chemical Safety Committee as reasonable Standard Operating Procedures by which all labs on campus should abide.

7. *Prior Approval*

Another provision of the Laboratory Standard is for incorporating policies into the CHP on: ***"The circumstances under which a particular laboratory operation, procedure or activity shall require prior approval from the employer or the employer's designee before implementation."***

Given the large diversity of laboratory work performed in campus laboratories, it is obviously impossible to specify the particular laboratory operations which would require prior approval. **It is therefore the responsibility of individual lab supervisors to establish these criteria for their operations. Establishment of prior approval criteria, if any, is solely the prerogative of the lab supervisor.** These criteria should be incorporated into the Standard Operating Procedures portion of their Lab-specific Chemical Hygiene Plan. In Section I of this document are provided template forms that lab supervisors can use for this purpose.

EH&S, in cooperation with the Chemical Safety Committee, has developed the following general *suggestions* for prior approval criteria that may be useful to lab supervisors in their plan development.

- When it is likely that toxic limit concentrations could be exceeded or that other harm is

likely

- Initial assignments involving “particularly hazardous¹”, radioactive² or biohazardous³ substances when the procedure used and the experience level of the worker would result in significant risk
- First-time use of a particular piece of laboratory equipment which has a substantial chemical, physical or biological risk associated with its use
- Use of volatile substances in Cold rooms, Warm rooms or other rooms with limited ventilation
- When working alone in laboratories/buildings with significantly hazardous substances and operations
- Operations as specified in Standard Operating Procedures, particularly those involving unattended operation.

¹ See Sections I and III: B(6). Also note that toxic and pyrophoric gases as defined by the Uniform Fire Code require special equipment and administrative provisions.

² All University workers using radioactive isotopes must be certified by EH&S before beginning work.

³ Biohazardous (infectious) agents require use authorizations.

8. Maintenance of Engineering Controls and Emergency Equipment

As stated in the Laboratory Standard, provisions for maintenance of both control measures and emergency equipment must be included in the CHP: “.....a requirement that fume hoods comply with section 5154.1 (Title 8, CCR), and that all protective equipment shall function properly and that specific measures shall be taken to ensure proper and adequate performance of such equipment....”

It is the policy of the University that all control measures designed to reduce chemical or physical hazards to employees shall be maintained in proper working order. If not functioning properly, or inadequate for the task, it is the responsibility of the campus entity responsible for the equipment to immediately inform affected workers of its status. Such equipment shall be repaired/replaced on a timely basis.

General Responsibilities:

FACILITIES MANAGEMENT (FM): Responsible for routine maintenance, replacement and installation of University-owned building emergency systems and environmental controls.

ENVIRONMENTAL HEALTH & SAFETY: Responsible for evaluating effectiveness of engineering control measures and emergency equipment used on campus. Will make recommendations to FM and users on implementation of appropriate equipment and control measures.

LAB SUPERVISOR/LAB PERSONNEL: Responsible for monitoring daily status and effectiveness of equipment and control measures. Responsible for reporting to appropriate campus entity if equipment is not functioning properly or if new procedures require changes or

additions to existing systems.

Specific Responsibilities:

FUME HOODS

Maintenance: Facilities Management
Annual certification: EH&S

BIOSAFETY CABINETS

Maintenance: Owner (generally lab supervisors)
Annual certification: Generally, EH&S arranges certification; owner covers cost

OTHER LOCAL EXHAUST VENTILATION

Maintenance: Facilities Management

EMERGENCY SHOWERS AND EYEWASHES

Maintenance: Facilities Management (FM shall check on a monthly basis by running water through them until the water runs clear)

RESPIRATORS

Administration: EH&S has sole responsibility for approval, fit-testing and issuance. Lab supervisors are responsible for identifying and directing individuals to EH&S who may require respirators in their work.
Maintenance: Lab supervisor or designee

OTHER PERSONAL PROTECTIVE EQUIPMENT

Maintenance: Generally provided by the lab supervisor -- maintenance/replacement are the responsibility of the supervisor and lab personnel

FIRE EXTINGUISHERS, DETECTORS, ALARMS, SUPPRESSION SYSTEMS

Administration: The campus Fire Marshal 's office is responsible for evaluation and approval of these systems
Maintenance: Facilities Management

OTHER DETECTION/ALARM SYSTEMS

Administration: EH&S has responsibility for evaluation and approval of detection/alarm systems such as those used in the campus Gas Safety Program
Maintenance: Facilities Management

EMERGENCY PHONES

Maintenance: Facilities Management

HAZARDOUS MATERIALS SPILL RESPONSE EQUIPMENT

Maintenance: EH&S is responsible for equipping, maintaining and using the primary hazardous materials response equipment stores for the campus. Individual labs or departments may have local supplies which they maintain.

C. EMPLOYEE RIGHTS, RESPONSIBILITIES AND POTENTIAL LIABILITY

1. *Employee Rights*

University employees are entitled to employment in as safe a workplace as reasonably possible. Specific rights include:

- The right to receive training from their lab supervisor in general safe work practices and specific training with regard to hazards unique to a job assignment.
- The right to have workplaces monitored for exposure to harmful substances and have the results available. If the concentrations of harmful substances are higher than the exposure limits allowed by Cal/OSHA standards, employees have the right to be told and to also be informed of corrective actions being taken.
- The right to see and copy medical records of exposure to toxic substances and other medical records maintained by the employer.
- The right to refuse to perform work under confirmed unsafe and hazardous conditions, and to file complaints with their lab supervisor, the EH&S department, and the local Cal/OSHA office without fear of reprisal.
- The right to see the employer's *Log of Occupational Injuries and Illnesses* (posted in Cheadle Hall and at EH&S).

2. *Potential Personal Liability*

It is not expected that individuals function without error or mistake. It is expected, however, that personnel make every reasonable effort to be knowledgeable and correct in their actions. To the extent that these actions are consistent with accepted good practice, conduct and requirements, employees are covered within the scope of their duties. Straying from these requirements exposes an individual to possible legal sanctions. For the protection of all concerned, please provide your full cooperation.

All UCSB managers (deans, provosts, chairpersons, lab supervisors, and vice-chancellors) are responsible under University Policy (P-5400) and the law for health and safety management within their areas.

3. *Responsibilities*

a. **Management**

Department heads, deans, supervisors, vice-chancellors and the chancellor are responsible for ensuring that individuals under their management have the training and authority to implement appropriate health and safety policies and practices relative to the Laboratory Standard.

b. **Laboratory Supervisors ("The Chemical Hygiene Officer")**

The term "supervisor" at UCSB refers to anyone having direct supervisory authority, and includes staff administrators, class instructors, research assistants, managers, and faculty. Under Cal/OSHA's Injury and Illness Prevention Program, supervisors are legally responsible for protecting the health and safety of employees and students under their supervision. This responsibility includes specific dictates in four major areas: training, identification and correction of hazards, accident reporting, and

recordkeeping. Resources and checklists are provided throughout this manual to assist laboratory personnel in fulfilling their obligations as supervisors.

The term “laboratory supervisor” is used throughout this manual and is synonymous with Chemical Hygiene Officer. Laboratory supervisor is defined as **“the person responsible for the supervision of a UCSB lab(s) and the employees and students who work there.”** The lab supervisor is generally a faculty member but are staff members for certain departmentally run labs.

Laboratory safety is the legal responsibility of the laboratory supervisor

- Ensure that all employees under their supervision (staff and students), are aware of potentially hazardous operations (materials, processes, equipment) that could be encountered in their lab.
- Enforce lab safety rules within the lab.
- Monitor the procurement, use and disposal of chemicals used in laboratory operations.
- Ensure training requirements are fulfilled, inspections are carried out, records are maintained, and audits are performed.
- Seek ways to improve chemical hygiene and laboratory safety within their operation.
- Implement policies and procedures described in this CHP, including the development of written Standard Operating Procedures which the lab supervisor has deemed necessary for highly hazardous lab operations. See Section I of this manual for specific forms and directions.

These duties parallel closely those assigned to the Chemical Hygiene Officer as stipulated in The Laboratory Safety Standard. It is therefore the judgment of the Chemical Safety Committee and EH&S that lab supervisors shall be designated as the Chemical Hygiene Officer for the operations/laboratories under their control. See also Sec. III:A(4)c.

c. Chemical Safety Committee

The campus Chemical Safety Committee is responsible for overview and periodic review of the campus Chemical Hygiene Program and related programs involving the use of hazardous materials or processes on campus.

d. Department

- Responsible for maintaining a safe environment—including inspections, problem solving, and preplanning for emergencies. Departments assign these responsibilities in different ways. Each department has a *Department Safety Representative (DSR)* who coordinates health and safety program elements in the department and serves as a liaison with EH&S. The department may also have an Management Services Officer, safety committee, or lab manager.
- Coordinate activities with Environmental Health & Safety that assist in compliance

efforts.

- Ensure that all operations under departmental control develop and implement lab-specific CHPs. While individual lab supervisors have the primary responsibility for CHP development, department administrations need to coordinate and support these efforts. Examples of department operations requiring CHP development may include: instructional labs, chemical storerooms and common-use instrumentation facilities.

e. Graduate Students

- Follow the established work procedures and safety guidelines in their area including those delineated in the campus and lab-specific Chemical Hygiene Plans.
- Attend and actively participate in appropriate safety training.
- Notify the laboratory supervisor or EH&S of any unsafe or potentially unsafe condition.

f. Undergraduate Students (same as Graduate Students)

g. Other Employees

(including post-doctoral and visiting researchers, staff research associates and laboratory technicians)

- Same general responsibilities as outlined under “Graduate Students” above.
- If the employee is also considered to be the manager of a laboratory, see the section above on responsibilities for “Laboratory Supervisors.”

h. Facilities Management

(see also Section III: B(8))

- Ensure the timely repair of malfunctioning physical plant equipment such as fume hoods, eye washes, safety showers, alarms, etc.
- Notify lab personnel and/or EH&S as appropriate when equipment is inoperable or malfunctioning and may affect the safe operation of University laboratories.

i. Chemical Hygiene Coordinator (EH&S Laboratory Safety Specialist)

- In cooperation with, and as a member of, the Chemical Safety Committee, develop and distribute the Chemical Hygiene Plan on campus. Assist and advise faculty and staff in implementation of their CHP. Monitor and evaluate the effectiveness of the CHP and coordinate with the committee their findings and recommendations.

j. Environmental Health & Safety (EH&S)

- Develop safety education and monitoring programs to maintain a safe and healthy environment for faculty, staff, students and visitors in order to facilitate the research and teaching functions of the University.
- Support research and instructional activities by developing legally mandated programs, providing technical guidance and consulting with and assisting departments in program implementation and maintenance. Make every effort to keep operations functioning smoothly in labs while meeting health, safety and environmental obligations.

