SONOMA STATE UNIVERSITY

Chemical Hygiene Plan

Department of Environmental Health & Safety
Dec 2021 Version 5.0

TABLE OF CONTENTS

RECORD OF REVISIONS

Version	By	Date	Description of Revision
3.4	RL	06/2019	Include a revision history for the document
3.4	RL	08/2019	Update the link for MSDS Online
3.5	RL/CG	03/2020	Update entire document to reflect current implementation of plan. Major reorganization and reword.
3.6	CG	06/2020	Revised PHA template in Appendix D. New template titled “PHA & SOP for Laboratory Processes”
4.0	CG	11/2020	Removed Appendix C due to implementation of Eye Wash and Safety Shower Program. Added Definitions section. Issued.
5.0	CG	12/2021	Annual review of program. Added requirement for annual self-inspections to section 5.6 and updates made to logo in accordance with university brand updates.

Legend:

RL = Ruth LeBlanc, Director of Environmental Health & Safety

CG = Christy Gorman, Safety Program Manager

DEFINITIONS

The definitions contained in CCR Title 8, Sec. 5191(b) are included in this Chemical Hygiene Plan by reference. Some of these and additional terms used in this CHP are listed below:

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

Carcinogen (see "select carcinogen" below).

Chemical Hygiene Officer- an employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan. This definition is not intended to place limitations on the position description or job classification that the designated individual shall hold within the employer's organizational structure.

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

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

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

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

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

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

Hazardous chemical- any chemical which is classified as health hazard or simple asphyxiant in accordance with the Hazard Communication Standard (Section 5194).

Health hazard- chemical that is classified as posing one of the following hazardous effects: Acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A of the Hazard Communication Standard (Section 5194) and Section 5194(c) (definition of "simple asphyxiant").

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

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

Laboratory-type hood- device located in a laboratory, enclosed on five sides with a movable sash or fixed partial enclosure on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms. Walk-in hoods with adjustable sashes meet

the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.

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

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

(2) Multiple chemical procedures or chemicals are used;

(3) The procedures involved are not part of a production process, nor in any way simulate a production process; and

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

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

Mutagen- chemicals that cause permanent changes in the amount or structure of the genetic material in a cell. Chemicals classified as mutagens in accordance with the Hazard Communication Standard (Section 5194) shall be considered mutagens for purposes of this section.

Physical hazard- a chemical that is classified as posing one of the following hazardous effects: Explosive; flammable (gases, aerosols, liquids, or solids); combustible liquid; oxidizer (liquid, solid, or gas); self-reactive; pyrophoric (gas, liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; in contact with water emits flammable gas; water-reactive; or combustible dust. The criteria for determining whether a chemical is classified as a physical hazard are in Appendix B of the Hazard Communication Standard (Section 5194) and Section 5194(c) (definitions of “combustible dust,” “combustible liquid,” “water-reactive” and “pyrophoric gas”).

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

Reproductive toxins- chemicals which affect the reproductive capabilities including chromosomal damage (mutations), effects on fetuses (teratogenesis), adverse effects on sexual function and fertility in adult males and

females, as well as adverse effects on the development of the offspring. Chemicals classified as reproductive toxins in accordance with the Hazard Communication Standard (Section 5194) shall be considered reproductive toxins for purposes of this section.

Responsible Person- the “Responsible Person” is accountable for the health and safety of a group of people in their working environment. In a research environment, this would be the Principal Investigator (PI). In a classroom laboratory, this would be the course coordinator or the faculty member that sets the curriculum in the laboratory

Select carcinogen- any substance which meets one of the following criteria:

(1) It is regulated by Cal/OSHA as a carcinogen; or

(2) It is listed under the category, “known to be carcinogens,” in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (1985 edition); or

(3) It is listed under Group 1 (“carcinogenic to humans”) by the International Agency for Research on Cancer Monographs (IARC) (Volumes 1-48 and Supplements 1-8); or

(4) It is listed in either Group 2A or 2B by IARC or under the category, “reasonably anticipated to be carcinogens” by NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:

(A) After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m3;

(B) After repeated skin application of less than 300 mg/kg of body weight per week; or

(C) After oral dosages of less than 50 mg/kg of body weight per day

1.0 INTRODUCTION

Sonoma State University is committed to providing a safe workplace and educational environment for its faculty, staff, students and visitors. The Chemical Hygiene Plan (CHP) has been created as a resource to provide information on requirements and guidance for the safe handling, use, and storage of hazardous materials in laboratory, shop, classroom, and studio settings.

1.1 Purpose

The purpose of the Chemical Hygiene Plan is to outline laboratory work practices and procedures which are necessary to ensure that members of the campus community are protected from the health hazards associated with chemicals with which they work. The Chemical Hygiene Plan is designed to assist management, faculty, and supervisors to recognize hazards in the workplace, methods used to minimize potential exposure to hazardous chemicals, and procedures for incidents involving hazardous materials. The CHP outlines responsibilities and establishes procedures for identifying, evaluating, and controlling hazardous materials.

1.2 Scope

The Chemical Hygiene Plan applies to all employees who engage in laboratory uses of hazardous chemicals as defined below.

- Laboratory – A facility where the “laboratory use of hazardous chemicals” occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.
- Studio – A facility where the use of art media MAY contain hazardous chemicals. It is a workspace where relatively small quantities of hazardous chemicals are utilized on a non-production basis.
- Hazardous Chemical – Any chemical which is classified as a health hazard or simple asphyxiant in accordance with the Hazard Communication Standard (Section 5194 of CCR, Title 8).
- Employee – Refers to a faculty, staff or administrative employee of the University.
- Laboratory workers – Includes those employees who are laboratory assistants, teaching assistants, and student employees

2.0 RESPONSIBILITIES

SSU's administration recognizes that unique chemical and physical hazards may be found in laboratories and art studios. This CHP is designed to address those hazards through laboratory-specific requirements and guidelines. It is a requirement that all instructors, students, laboratory workers, contractors, and visitors who work in SSU laboratories or studios be familiar with and follow the requirements of this document.

2.1 Environmental Health and Safety (EH&S)

Environmental Health and Safety provides training and assistance to help departments and Principle Investigators meet the requirements of the Chemical Hygiene Plan and federal, state, and local regulations. Environmental Health and Safety responsibilities include the following:

- Provide hazard communication and laboratory safety training on an annual basis.
- Dispose of chemical wastes generated from laboratories in accordance with approved disposal methods.
- Periodically perform chemical hygiene and lab safety inspections, maintain inspection records, and notify departments/lab supervisor(s) of the results of these inspections.
- Review Hazard Assessments for research laboratories, as well as, Project Hazard Analyses.
- Ensure proper labeling guidelines are followed.
- Coordinate efforts to clean large spills.

2.2 Chemical Hygiene Officer (CHO)

The University must designate a Chemical Hygiene Officer. The University's Chemical Hygiene Officer is the Director of Environmental Health and Safety. The CHO's primary duty is to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan. In addition, responsibilities of the Chemical Hygiene Officer or their designee will include the following:

- Ensure the CHP is reviewed on an annual basis and updated as needed.
- Provide updates to Chemical Safety Committee on federal, state, and local regulations concerning laboratories, chemicals and worker safety issues.
- Provide consultation to Departments regarding program compliance.
- Determine which employees need exposure monitoring and conduct exposure monitoring when necessary.

2.3 Deans and Department Chairs

It is the responsibility of Deans and Department Chairs to ensure faculty, staff, principle investigators, and laboratory supervisors are adhering to the requirements within the Chemical Hygiene Plan and all local, state, and federal regulations.

2.4 Research Labs: Principle Investigators (PI)/Laboratory Supervisors

It is the Principle Investigator and Laboratory Supervisor's responsibility to institute the Chemical Hygiene Plan and ensure compliance with requirements within their respective laboratories. Responsibilities of each Principle Investigator/ Laboratory Supervisor includes the following:

- Know current requirements of the CHP and adhere to those requirements.
- Ensure all laboratory work is performed in accordance with the CHP.
- Know the location of all safety and emergency equipment and operating procedures.
- Create standard operating procedures and perform a Hazard Assessment utilizing RSS for specific processes and experiments. For extremely High Hazard Operations a Project Hazard Analysis may be required by EH&S, the Chemical Hygiene Officer (CHO), and/or the Chemical Safety Committee (Appendix C).
- Conduct, within their respective areas of responsibility, formal laboratory inspections using RSS Inspect.
    - Faculty that are leaving the University or no longer participating in research can use the Laboratory Clearance for Departing Researchers form (Appendix H) for close out inspection.
- Ensure that action is taken to correct work practices and conditions that may result in employee overexposure or the release of toxic chemicals.
- Prepare for accidents that may result in the unexpected exposure to personnel or the environment. This includes stocking laboratories with spill clean-up material.
- Ensure all laboratory students receive and understand training. (see Appendix G)
- Ensure all chemicals and wastes are labeled according to regulatory standards.
- Monitor the safety performance of laboratory workers to ensure the required safety practices, equipment (including personal protective equipment and engineering controls), and techniques are being appropriately employed.
- Make Safety Data Sheets (SDS's) available to all laboratory workers and students.
- Ensure that proper disposal of unwanted hazardous chemicals and/or hazardous waste is done so with the assistance of EH&S.
- Report to EH&S all incidents when either of the following occurs:
    - When a laboratory worker is exposed to a hazardous material where symptoms of exposure are evident and/or medical treatment (including first aid) is rendered; or
    - When there is a spill or release of a hazardous substance where personnel in the immediate area cannot clean-up the spill safely.

2.5 Teaching Labs/Areas/Studios: Faculty, Staff, & Laboratory Workers

Laboratory workers includes those employees who are laboratory assistants, teaching assistants, and student employees. Faculty, Staff, & Laboratory Workers' responsibilities include the following:

- Understand and comply with the procedures outlined in the Chemical Hygiene Plan.
- Understand and comply with all standard operating procedures which apply to the laboratory in which they are working in.
- Ensuring all students receive safety training and it has been documented and maintained in department files. (see Appendix G)
- Know the location of the safety and emergency equipment and operating procedures for the lab/area.
- Wear appropriate clothing and shoes in the laboratories and chemical stockrooms.
- Develop good personal chemical hygiene habits.
- Understand the function and proper use of all personal protective equipment. Use (wear) personal protective equipment when mandated or necessary.
- Report to the laboratory supervisor any significant problems arising during standard operating procedures.
- Ensure the Safety Information Card is updated and posted outside of the lab/area.
- Report to the laboratory supervisor all facts pertaining to accidents which occur in the laboratory or if conditions or actions exist that could result in an accident.
- Know the location and make available, the SDS's for the chemicals in the laboratory. The link for MSDS Online is https://msdsmanagement.msdsonline.com/company/8511B604-100D-449A-9A6B-366EFF19DA04
- Receive and understand all laboratory safety training as required.

2.6 Chemical Safety Committee (CSC)

The responsibilities of the Chemical Safety Committee are as follows:

- Meet twice a year or as needed.
- If requested, will review new procedure, assess the need for a PHA or process proposals for approval.
- If requested, will review proposals to change or modify existing procedure or process for approval.
- Discuss, explore, study and resolve problems that arise in the laboratories.
- Prepare meeting minutes and make available to the public.
- Review investigations of laboratory or hazardous area accidents and causes of incidents.
- Submit recommendations to the Chemical Hygiene Officer on laboratory or hazardous area problems.

2.7 Facilities Management

The Facilities Management Department is responsible for:

- Reviewing and approving laboratory equipment installations for compliance with pertinent building codes and regulations.
- Maintaining and servicing facilities-related equipment which services laboratories/studios including local exhaust ventilation systems, eye wash/drench showers, and emergency/life safety equipment (e.g. building fire alarms and fire extinguishers). Facilities Management will retain all documentation relative to safety equipment inspections.
- Providing guidance to Laboratory management, researchers, and the CHO regarding appropriate engineering control installations for chemical and physical hazards.
- Testing the performance of equipment identified in bullet 2 above, on the prescribed intervals.

3.0 PROCUREMENT AND APPROVAL

3.1 Procurement and Distribution

Before a chemical is received, information on the proper handling, storage, and disposal should be known to those who will be handling the chemicals. Safety data sheets (SDS's) shall be maintained so they are easily accessible and shall be referenced when receiving a chemical. No container should be accepted without an adequate identifying label and accompanying SDS. Procurement of chemicals must follow all established University and CSU Policies and Procedures.

3.2 Donations of Chemicals

The acceptance of donated chemicals, unsolicited samples of hazardous materials and hazardous substances is strictly prohibited. Only chemicals and hazardous substances that have been purchased from a vendor are allowed on University property.

3.3 Prior Approval for Certain Substances

Some substances needing prior approval from EH&S before being purchased include radioactive materials, "listed" regulated carcinogens, and select agents and toxins.

3.3.1 Requirements for Radioactive Materials

To purchase radioactive materials, a PI must obtain prior approval from the Radiation Safety Officer. More information is available in the University's Radiation Safety Manual.

3.3.2 Requirements for "Listed" Regulated Carcinogens

"Listed" carcinogens are the most hazardous class of carcinogen. Cal/OSHA has established extensive regulations governing their distribution, handling, and use. Any PI who wants to purchase a regulated carcinogen that is listed in CCR, Title 8, Section 5209 must get prior approval from the Chemical Hygiene Officer before ordering the substance.

3.3.3 Requirements for Possession of CDC and USDA Select Agents and Toxins

The Center for Disease Control and Prevention (CDC) regulates the possession, use, and transfer of select agents and toxins that have the potential to pose a severe threat to public health and safety. The CDC Select Agent Program oversees these activities and registers all laboratories and other entities in the United States that possess, use, or transfer a select agent or toxin. Possession of any of these select agents or toxins requires registration with the CDC (unless amounts are exempt as outlined in the next paragraph of this section). For an up to date list of regulated select agents and toxins please visit https://www.selectagents.gov/SelectAgentsandToxinsList.html.

The CDC has established a list of select agent toxins which may be possessed without registration (unregulated) with the CDC, provided the maximum (permissible) amounts are not exceeded by each PI. Please refer to the regulatory body's website (https://www.selectagents.gov/PermissibleToxinAmounts.html) for a list of the select

agents that do not require registration when below permissible amounts and each agent's associated maximum permissible amount.

To discuss the registration process, contact EH&S at 664-2100.

3.4 Requirements for Possession of DEA Controlled Substances

DEA Controlled Substances do not need prior approval from EH&S; however, the Principle Investigator must follow certain steps which are required by the DEA before purchasing. Please refer to the Controlled Substances guidance documents, *DEA Controlled Substance Protocol* and *DEA Controlled Substance Ordering* form.

4.0 DETERMINATION OF CONTROL MEASURES

Individual departments are responsible for identifying hazards within their educational and research programs. Multiple methods should be utilized to identify hazards, including, but not limited to:

- Hazard assessments utilizing the Risk and Safety Solutions (RSS) Assessment module.
- Conduct and submit a Hazard Analysis (PHA) for extremely High Hazard Operations and any relevant Standard Operating Procedures.
- Hazardous chemical inventories and SDS referencing.
- Employee and student safety concern notifications.
- Inspections of work practices and areas.
- Incident investigations.
- Employee exposure monitoring.

When performing hazard assessments, the following items should be taken into consideration:

- The toxicity and quantity of chemical(s),
- Routes of entry,
- Possibility of reaction with other chemicals,
- Duration of exposure,
- Level of energy or air contaminant arising from a process, and
- Effectiveness of any control measures.

Based on the findings from these methods, appropriate control measures will be selected and implemented. Hazards will be eliminated or reduced using engineering controls, administrative controls, and/or personal protective equipment, in that order. Guidelines from Prudent Practices in the Laboratory by the National Research Council should always be considered when working in a laboratory.

5.0 CONTROL MEASURES

Control measures will be implemented to ensure that no employee be exposed to Cal/OSHA regulated substances above their exposure limit(s) as specified in CCR, Title 8, Section 5155, Table AC-1 “Permissible Exposure Limits for Chemical Contaminants”. Safety Data Sheets (SDS) should always be referenced in order to protect human and environmental health.

5.1 Standard Operating Procedure (SOP)

Standard operating procedures are intended to provide laboratory workers with general guidance on how to safely work with a specific class of chemical or hazard. Appendix A of this plan outlines SOPs for use and handling for specific classes of hazards. In some instance multiple SOPs may be applicable for a specific chemical (e.g. both the SOPs for flammable liquids and carcinogens would apply to benzene).

In addition to these SOPs, the subsequent sections summarize control measures that must be utilized in all laboratories regardless of the hazards present.

5.2 Personal Hygiene

It is the responsibility of every employee and student to adhere to these personal hygiene guidelines. Supervisors shall oversee that they are implemented.

- Food, beverage, cigarettes, vaping devices, or chewing gum is NOT allowed in laboratories.
- Never eat, drink, smoke, bite fingernails, apply cosmetics or handle contact lenses while in laboratory. Wash your hands after leaving the laboratory and before doing any of these activities.
- Never store food in a laboratory refrigerator or a refrigerator which is used to store chemicals. Refrigerators must be labeled for their intended use.
- Never utilize a microwave or other cooking/heating device to heat food or beverages that is intended for chemical use. Microwaves/heating devices must be labeled for their intended use.
- Wash promptly whenever a chemical has contacted your skin.
- Never mouth pipette anything or use mouth to start a siphon.
- Avoid inhalation of chemicals. Do not smell or taste chemicals.

5.3 Personal Protective Equipment (PPE)

Individual departments and their PI’s are responsible for ensuring appropriate PPE is made available and properly utilized by employees and students. PPE shall be appropriate to mitigate the hazards identified. Reference SDS’s for a list of required personal protective equipment. PPE should be inspected before each use to ensure the equipment has not been compromised. If deficiencies in PPE are noted, the equipment should be cleaned, repaired or replaced before use. All PPE must be used, stored, cleaned and maintained in accordance with manufacturer’s instructions. Lab areas, with a minimum continuous level of required PPE, must have posted signage specifying

minimum PPE to be worn in area at all times. For an in-depth description of required daily attire in SSU laboratories refer to “The Use of Personal Protective Equipment in Sonoma State University”, found in Appendix B of this plan.

5.3.1 Eye Protection

It is recommended to refrain from wearing contact lenses when working with chemicals.

Eye and face protection worn when working with chemicals shall meet the requirements of the current American National Standards Institute (ANSI Standard Z87.1). Protection against liquid splash is provided by ANSI Z87.1 rated goggle, not safety glasses. When the chemical hazard includes a splash hazard, eye protection must include a face shield. Reference the substance’s SDS.

5.3.2 Skin, Hand, Body, and Foot Hand Protection

Avoid all skin contact with chemicals. Wear adequate clothing and footwear. Cotton clothing is the best choice. Lab coats are recommended when working with chemicals. Remove your lab coat when you leave the laboratory or if it becomes contaminated. Open-toed shoes and sandals are not permitted when working with chemicals. Confine long hair and loose clothing.

Gloves must be worn for laboratory procedures where hazards may contact the skin. Wear gloves appropriate for the chemical. Chemical SDS’s and the glove’s manufacturer should be referenced when selecting gloves. Take degradation, permeation, and breakthrough into consideration. Heat resistant gloves must be used when handing hot objects. Abrasion resistant gloves should be worn for handling broken glass.

5.3.3 Respirators

The use of respirators at SSU is governed by the requirements set forth in the SSU Respiratory Protection Plan. Respirators are not needed in a normal laboratory setting.

5.4 Emergency and Life-Safety Equipment

Each laboratory employee shall be familiar with the location, application, and correct way to operate emergency and life safety equipment. The equipment must meet regulatory standards and be inspected on a routine basis. Facilities Management conducts monthly inspections on emergency eye washes and safety showers to ensure standards are met. The SSU Eye Wash and Safety Shower Program describes standard operating procedures for inspecting emergency eyewashes and showers.

Fire extinguishers are inspected monthly, and in addition, receive annual service, both which are provided by Facilities Management. The maintenance, inspection and supply of first-aid kits falls on each department. First-aid kits should only consist of dressings and band-aids.

If an employee notices life-safety or emergency equipment that is past-due for its inspection, is damaged, or malfunctioning it should be reported to Facilities Management immediately.

5.5 Ventilation

Mechanical ventilation systems are utilized on campus as a control measure. Chemicals with an inhalation hazard shall be used inside a laboratory-type fume hood. When using biohazard agents or biohazardous materials a biological safety cabinet must be used. At the University only Class II, Type A2 biosafety cabinets are utilized. Fume hoods and biological safety cabinets are quantitively tested after installation, alterations, maintenance, and at least annually thereafter. An inventory of all laboratory-type fume hoods and biological safety cabinets, and their face velocity testing results, is maintained and kept by Facilities Management.

All laboratory-type fume hoods must have a minimum average face velocity of 100 linear feet per minute with a minimum of 70 linear feet per minute at any one point. It is the responsibility of Facilities Management to test face velocities of all fume hoods on campus. Fume hood testing procedure can be made available through the vendor.

All biosafety cabinets (of the Class II, Type A2 variety) must have a minimum inward average face velocity of at least 75 linear feet per minute at the work opening. The certification of ventilation rates (face velocity) of biosafety cabinets is the responsibility of individual departments.

5.6 Housekeeping and Inspections

Self-inspections of laboratory areas are the responsibility of the PI, faculty and staff. Inspections shall be comprehensive and conducted on a regular basis (at a minimum once annually). Actions should be taken to correct any deficiencies found during the inspection in a timely manner. The following housekeeping items should be followed:

- Work surfaces and floors should be cleaned regularly and be clear of clutter. Bench tops should be cleaned at the end of an operation or experiment, or at a minimum, at the end of each workday.
- All chemicals must be placed in their assigned storage areas at the end of each workday. Chemicals shall not be stored in fume hoods while not in use.
- Spills shall be promptly cleaned up. Properly dispose of the spilled chemical and materials used to clean up the spill.
- Contaminated glassware should be cleaned regularly.
- Exits, hallways, stairs, and life safety/emergency equipment (eye wash & safety showers) must never be blocked.
- Compressed gas cylinders must be secured.
- Label all chemical containers and waste properly.
- Do not store extraneous material(s) in a fume hood. These material(s) will interfere with the air flow and jeopardize the safe operation of the fume hood.
- Fume hood sashes shall be closed when not in use.

- Incompatible chemicals and operations need to be segregated during use.

5.7 Chemical Management

5.7.1 Inventory

The inventory of chemicals kept on-hand should be as small as practical. Economies of scale - buying large or bulk amounts - usually costs more in the long run due to the cost of disposing of old, unwanted chemicals as hazardous waste and seriously increases the potential and severity of fire, explosion and spills. A physical inventory of chemicals on hand shall be conducted annually to identify the following:

- Containers which are leaking,
- Containers which are damaged (i.e. corroded, cracked, or dented) and may begin leaking
- Materials which are unknown (i.e. labels missing or illegible),
- Chemicals which are expired,
- Chemicals which are no longer needed, and
- Chemicals which form peroxides or are considered to be potentially explosive compounds.

Chemicals in damaged or leaking containers must be repackaged into new, sound containers and relabeled, or disposed of. Do not open a bottle containing a peroxide former that has obvious crystal formation; the friction caused by opening a crystallized lid can cause an explosion. A list of unwanted chemicals should be submitted to EH&S for pick-up and disposal.

5.7.2 Expiration Dates

Many chemicals lose their usefulness over time due to degradation with age (shelf life). The expiration dates which appear on labels made by chemical manufacturers should be adhered to. For peroxide forming compounds, label with date of opening and test every 3, 6, or 12 months depending on reactivity level. When the material reaches its expiration date, discard or neutralize.

5.7.3 Labeling

Container labeling is important to minimizing accidental exposure to hazardous materials and to prevent accidental mixing of incompatible chemicals. All chemical containers must be labeled with at least the identity of the contents and the hazards those contents present to users. Never remove or deface a label unless it will be replaced with a new one. Fading or damaged labels need to be reattached or replaced before the material becomes unknown. Any substance in an original manufacturer’s container that is dated prior to the year 1994, must be evaluated and relabeled to follow the Global Harmonized System (GHS) or discarded. For more information regarding chemical labeling requirements please refer to the SSU Hazard Communication Program.

5.7.4 Storage

Chemicals should not be exposed to heat or direct sunlight. Chemicals, when not in use, should not be stored in fume hoods or on bench tops; all chemicals should be placed in their assigned storage areas at the end of each day. Hazardous liquid chemicals should be stored below eye level.

Chemicals should be stored according to their chemical compatibility (their ability to react with each other). Chemicals which can react with each other and create a hazardous condition, such as fire or the generation of a toxic or flammable gas, should be stored apart. The separation should be sufficient enough to prevent the accidental mixing of materials in case of a spill. EH&S's website has general guidelines on how to properly segregate chemicals, but the substances' SDSs should always be referenced.

5.7.5 Hazardous Waste Disposal

Chemical wastes must be kept in appropriately labeled containers and meet the following requirements:

- Be of sound construction and in good condition (i.e. not leaking),
- Be clean and free of any contamination,
- Be constructed of material compatible with the waste being stored, and
- Be kept closed at all times except when material is being added or removed. This means with an appropriate screw cap or bung screwed on tight enough not to leak if the container is inverted. A waste drum or bottle which is left open is a citable EPA violation.

In addition to the above requirements the following rules must be adhered to as well:

- Do not overfill containers (more than 80% full).
- Do not mix dissimilar wastes.
- Do not dispose of chemicals in the sink, toilet, or trash can.
- Do not use fume hoods to intentionally evaporate chemicals as a form of disposal.

EH&S has label templates to use for hazardous waste containers. Contact EH&S for questions concerning the label or where to obtain one. Please consult the website for any of your EH&S needs as well.

Hazardous waste shall not accumulate longer than a semester or more than 150 days. To arrange for a chemical waste pickup, contact EH&S for your specific hazardous waste needs.

5.8 Working with Particularly Hazardous Substances (PHS)

Particularly hazardous substances are classified as acutely toxic chemicals, reproductive toxins, and select carcinogens. Consult the substance's SDS to determine if it meets one of the definitions below for a PHS.

- Acutely toxic chemicals - substances that have an oral LD50 of less than 50 mg/kg, a 24-hour skin contact LD50 of less than 200 mg/kg, and/or an inhalation LD50 of less than 200 ppm or 2000 mg/m3 for 1 hour.
- Reproductive Toxins - substances which affect reproductive capabilities including chromosomal damage (mutagens), affect the fetus (teratogens), affect the sexual function and fertility in adults, and/or affect the development of offspring.
- Select Carcinogens - substances that are regulated by Cal/OSHA as a carcinogen, are "known to be carcinogens" in the NTP Report on Carcinogens, is listed under Group 1 "carcinogenic to humans' by the IARC, or is listed in either Group 2A or 2B by the IARC or under the category "reasonably anticipated to be carcinogens" by the NTP and causes significant tumor incidence in experimental animals in accordance with the criteria listed in CCR, Title 8, Section 5191.

All work that involves handling or transfer of PHS requires approval from the PI. The PI must ensure that the person or team who will be working with PHS understands the hazards and has received adequate training and supervision for the procedure or task. All work with PHS must be conducted in a designated area of a laboratory and must have a Project Hazard Analysis completed for the specific operation that has been approved by the Chemical Hygiene Officer and/or EHS Director.

If a small spill occurs, promptly decontaminate all surfaces that have come in contact with the PHS. Refer to the SDS for assistance with determining an appropriate decontamination method. For safe removal of contaminated waste contact EH&S.

5.9 Working Alone

Working alone in a laboratory creates increased risk. Avoid working alone whenever possible, especially when performing high hazard operations. Employees/laboratory workers must consult with their PI before performing any operations after normal working hours or when others will not be present. Individual PI's/supervisor will determine whether it is safe to work alone and/or after hours unattended. The PI/supervisor must obtain approval from their respective department and notify EH&S. If an employee/laboratory worker is authorized to work alone, it is advised that the employee make arrangements with others in the building to check in periodically. Mobile contact information of the PI or supervisor must be made available to any employee/laboratory worker allowed to work alone in the laboratory in case of emergency.

5.10 Unattended Lab Experiment

If a lab experiment will be unattended it is the responsibility of all working in the laboratory to notify others of the hazards before entering the lab. On the outside door a sign must be placed with emergency contact information, the phone number for University Police Department and the hazards associated with the unattended lab experiment. A template of the unattended lab experiment sign can be found in Appendix D of this plan.

6.0 EMERGENCY RESPONSE

Emergency procedures, phone numbers, and evacuation routes must be posted in laboratory areas. Exit routes, fire extinguishers, and emergency eyewash and showers must be clearly marked and free of obstructions. Doors to laboratories must be kept closed when not occupied.

The Hazardous Material Emergency Information Sheet and the Safety Information Card (Appendix E and F, respectively) can be posted on or near the entrance door to the laboratory. This information card should be used as a quick reference guide during an emergency.

6.1 Chemical Spills

There is no defining amount that specifies what a minor or major spill is; it depends on numerous factors; the amount spilled, chemical spilled, and the environment in which it is spilled in. For references sake, a minor chemical spill is a spill or release of hazardous material that laboratory personnel are capable of handling safely without the assistance of safety or emergency personnel. A minor chemical spill becomes a major chemical spill whenever circumstances change so that laboratory personnel can no longer safely handle the situation. The cleanup of a chemical spill should only be done by workers who are familiar with the spilled chemical and its hazards. SDS's should be referenced when there is an accidental spill.

Locations where chemicals are stored should have available a supply of equipment and materials for use in the event of a minor chemical spill. A good rule of thumb is that the quantity of spill response material should be sufficient enough to handle twice the size of the largest container in storage. Spill response materials should include:

- Absorbents (granular or "pillows")
- Personal protective equipment
- Scoops and/or pans for picking up granular solids
- Plastic bags to contain contaminated absorbent
- A permanent marker or label to use for labeling the bag of contaminated clean-up materials

6.2 Accidental Exposures

For a minor incident, reference the SDS for first-aid measures and notify your immediate supervisor. For a major incident, call 911. If assisting a person who has been exposed to a chemical, use appropriate PPE to avoid exposing yourself. Always inform your supervisor if you are ever exposed to a chemical in any way.

6.3 Fire Response

In the event of a fire, leave the area immediately and call 911. Pull a fire alarm on your way out of the area. Fire extinguisher use is not required or expected by any employee, however, if a fire extinguisher is available, and you have been trained in its use, and it is safe to do so, an extinguisher may be used on a small fire in its incipient stage.

6.4 Compressed Gasses

Compressed gas cylinders pose a hazard of sudden release of pressure. Ensure cylinders are properly secured to a lab bench or wall. Following such a release, some cylinders or tanks can be cold enough to freeze skin. Depending on the contents, fire or toxic inhalation hazards can also exist. Leave the area immediately and call 911. Pull a fire alarm on your way out if evacuation of the building is necessary.

6.5 First Aid

First aid consists of washing with soap and water and applying a dressing or band aid. For employees, including student employees, any treatment beyond this requires the person seek professional medical attention and requires the completion and submittal of proper forms to Human Resources Employees Leaves and Workers' Compensation Department (707-664-2979). In the event an academic student is injured, contact Risk Management (707-664-4039).

7.0 MEDICAL SURVELLIANCE

7.1 Medical Monitoring

The University will provide all employees, at no cost to them, without the loss of pay, and at a reasonable time and place, who work with hazardous chemicals, an opportunity to receive medical attention, examination, and/or consultation by a Physician or Licensed Health Care Professional (PLHCP) under the following circumstances:

- Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed to in the laboratory;
- Where exposure monitoring reveals an exposure level above the action level (or in the absence of an action level, the exposure limit) to a regulated substance where medical surveillance requirements have already been established; and
- Whenever an event takes place in the work area such as a spill, leak, explosion, or other occurrence resulting in the likelihood of a hazardous exposure.

The content of the medical examination and the need for any follow-up examinations is determined by the examining PLHCP. The examining PLHCP will be provided the following information:

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

The PLHCP will submit a written opinion which will include the following information:

- Any recommendation for further medical follow-up,
- The results of the medical examination and any associated tests,
- A notice if any medical condition which may increase the employees' risk as a result of exposure to a hazardous chemical found in the workplace, and
- A statement that the employee has been informed by the physician of the results of the consultation, medical examination, and/or any medical condition that may require further examination or treatment.

The written opinion will not reveal specific findings or diagnoses unrelated to the occupational exposure in which the medical evaluation was intended for.

7.2 Pregnant Employees and Students

It should be noted that because of ethical considerations, virtually no comparable clinical tests have been conducted on humans, however, empirical studies have indicated a causative effect between exposure to some chemicals and reproductive abnormalities.

7.2.1 Employees

Pregnant employees should consider reviewing the potential for exposure to chemicals with their physician. You will need to be prepared to share a list of chemicals which you would likely be exposed to occupationally. In addition, employees should work closely with their supervisor and Human Resources ADA Program Administrator.

7.2.2 Students

The University cannot eliminate all risk factors faced by pregnant students in the classroom laboratory setting. Therefore, a physician's consent is required of all pregnant students to participate in classroom laboratories. Pregnant students who continue to participate in the classroom laboratory are not covered by the University for any exposure they may come in contact with that has the potential or capability to cause harm to the woman or child. For questions or concerns contact the Office for the Prevention of Harassment & Discrimination.

8.0 EMPLOYEE INFORMATION AND TRAINING

The University will provide employees with information and training to ensure that they are aware of the hazards of chemicals present in their work area. Such information and training will be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present, prior to assignments involving new exposure situations and annually thereafter.

8.1 Information

All employees should familiarize themselves with the following information:

- California Code of Regulations, Title 8, Section 5191 "Occupational Exposure to Hazardous Chemicals in Laboratories" and its appendices;
- The University's Chemical Hygiene Plan which can be found on EH&S's website;
- Exposure limits for Cal/OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable Cal/OSHA regulation;
- Signs and symptoms associated with exposure to hazardous chemicals used in the laboratory; and
- The location and availability of known reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory including, but not limited to, safety data sheets received from the chemical supplier.

8.2 Training

Training will include, at a minimum the following elements:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical,
- The physical and health hazards of chemicals in the work area, and
- The measures employees can take to protect themselves from these hazards, such as utilizing appropriate work practices, emergency procedures, and personal protective equipment.

Operators of fume hoods will receive additional training. After the training, the fume hood operator shall be able to:

- Use the hood and its features safely;
- Determine the date of the last performance test and if the hood performance met the requirements;
- Understand the general hood purpose, airflow characteristics, and potential for turbulent airflow and escape of hazardous substances from the hood; and
- Know where the quantitative airflow monitor or alarm system is located in the hood and how it is used to indicate an inward airflow during hood operation.

9.0 RECORDKEEPING

The University will establish and maintain records for the following:

- Exposure monitoring,
- Medical consultations and examinations (kept by the University's medical provider),
- Physicians written opinions,
- Trainings, and
- Measurements of fume hood face velocities.

Exposure measurements, medical consultations and examinations, and physicians written opinions will be kept in accordance with Section 3204 of Title 8. Training records and ventilation system face velocity testing will be kept for a minimum of 5 years.

10.0 PLAN REVIEW AND EFFECTIVENESS

The Chemical Hygiene Plan will be reviewed on an annual basis by the Chemical Hygiene Officer to ensure it meets regulatory requirements. The Plan's effectiveness will be evaluated by reviewing accident investigation, safety related complaints, completion of training, and inspections. The plan will be updated as needed.

SONOMA STATE UNIVERSITY

Appendix A: General Use Standard Operating Procedures by Hazard Class

Standard Operating Procedure

Acutely Toxic Chemicals

Hazard Description: Acutely toxic chemicals are those substances that pose significant adverse health effects for immediate or short-term exposures. The route of exposure that causes the adverse effect may be inhalation, absorption, or ingestion, depending on the chemical. Acutely toxic chemicals could be in solid, liquid, or gas form.

Labeling: Acutely toxic chemicals have a GHS toxicity category of 1 or 2 and are labeled with the following pictogram:

Storage: Storage of acutely toxic chemicals must adhere to the requirements outlined in the Chemical Hygiene Plan.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling acutely toxic chemicals:

- Must be handled in a signed, designated area of the laboratory.
- Must be used in a fume hood if inhalation hazard is present.
- Consider using disposable work surface covers (bench protectors) and dispose daily.
- Immediately close all containers of acutely toxic chemicals after use.
- Do not dispense acutely toxic chemicals directly onto a laboratory balance in the general lab space. Instead, use sealable pre-tared container inside fume hood, then take the sealed container to the balance. Make all adjustments inside a fume hood.

Personal Protective Equipment: Reference SDS

Spill and Decontamination: For spills of solid materials, do not dry sweep. Decontamination procedures vary depending on the material being handled. Reference SDS. All surfaces and equipment should be wiped with the appropriate cleaning agent following dispensing or handling to prevent accumulation of acutely toxic chemical residue.

Standard Operating Procedure

Carcinogens

Hazard Description: Carcinogens are chemicals that are known to cause cancer in humans and/or animals or are suspected of causing cancer. Refer to the Particularly Hazardous Substances section of the Chemical Hygiene Plan for a full definition of "Select Carcinogens". Carcinogenic effects may only become evident after a long latency period and may cause not immediate harmful effects.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Carcinogens have the following GHS "Health Hazard" pictogram:

Storage: Storage of carcinogens must adhere to the requirements outlined in the Chemical Hygiene Plan.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling carcinogens:

- Must be handled in a signed, designated area of the laboratory.
- Carcinogens should be used inside fume hoods or if necessary, a glove box.
- Use disposable work surface covers (bench protectors) in areas where carcinogens chemicals are handled to prevent contamination of work surface.
- Immediately close all containers of carcinogens after use.
- Do not dispense carcinogens directly onto a laboratory balance in the general lab space. Instead, use sealable pre-tared container inside fume hood, then take the sealed container to the balance. Make all adjustments inside a fume hood.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: For spills of solid materials, do not dry sweep. Reference SDS.

Standard Operating Procedure

Compressed Gases

Hazard Description: All compressed gases pose a physical hazard because of the high pressures inside the cylinder. Damaged cylinders may become uncontrolled rockets or pinwheels and cause severe injury. This danger can happen when unsecured, uncapped cylinder are knocked over causing the cylinder valve to break and high-pressure gas to escape rapidly. Poorly controlled release of compressed gas in chemical reaction systems can cause vessels to burst, create leaks in equipment or hoses, or produce runaway reactions. Compressed gases can be either liquified, non-liquified, or dissolved. Depending on the substance, there may also be additional hazards such as fire, explosion, corrosion, asphyxiation, and toxicity.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Compressed gases must have a label indicating whether the cylinder is full or empty and the following GHS pictogram:

Storage: Storage of compressed gases must adhere to the requirements outlined in the Chemical Hygiene Plan. Cylinders must be secured to wall, floor, or laboratory bench with appropriate cylinder supports. Do not store cylinders with the regulator in place. Cylinder caps should always remain on the cylinder unless a regulator is in place. Cylinders must be stored where they will not become overheated. Avoid storage near radiators, areas in direct sunlight, steam pipes, and heat releasing equipment.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling compressed gases.

- Transport compressed gas cylinders on equipment designed for this function. Never carry or “walk” cylinders by hand.
- Immediately close the cylinder valve after use.
- Leak check gas tubing or piping connections before turning on gas.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: If you observe or suspect the hazardous or inert gas is leaking attempt to turn off the cylinder at the cylinder valve if it is safe to do so. If you are unable to turn off the gas or have any doubts, evacuate the area immediately. Prevent others from entering the area. Reference SDS.

Standard Operating Procedure

Corrosives (Liquids and Solids)

Hazard Description: Corrosive chemicals are substances that cause visible destruction or permanent changes in human skin tissue at the site of contact. Corrosive chemicals can affect the eyes, skin, and respiratory tract. The main classes of corrosives include strong acids, bases, and dehydrating agents. Liquid corrosives are those with a pH of 4 or lower or a pH of 9 or higher. Solid chemicals are considered corrosive when in solution they fall in the above pH range. A highly corrosive chemical has a pH of 2 or lower or a pH of 12.5 or higher.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Corrosives have the following GHS pictogram:

Storage: Storage of corrosives must adhere to the requirements outlined in the Chemical Hygiene Plan. Specially designed corrosion-resistant cabinets should be used for the storage of corrosive materials. If no corrosion-resistant cabinet is available, store corrosives on plastic trays.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling corrosives.

- When working with highly toxic corrosive chemicals use fume hood.
- Immediately close all containers of corrosive chemicals after use.
- The use of chemical dispensers.
- Perform liquid transfers slowly using a funnel to minimize splash, splatter, and spills.
- Do not pour water into acid. Slowly add acid to water while carefully stirring. Some corrosive chemicals will generate heat and/or release gas on contact with water. Understand the potential for reaction with water before diluting a chemical.
- Reactions involving corrosive chemicals are often exothermic. Use heat-resistant labware and allow extra volume in your vessel to account for expansion and/or foaming.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: Reference SDS.

SONOMA STATE UNIVERSITY

Standard Operating Procedure

Cryogens and Dry Ice

Hazard Description: A liquid cryogen is a liquified gas with a boiling point typically below 123 K (-150°C). Dry ice is frozen carbon dioxide. Dry ice sublimates from a solid to a gas at temperatures above -78.5°C.

The following hazards are associated with cryogens and dry ice: burns, asphyxiation, fire hazards, formation of liquid oxygen, pressure hazards, and facility damage.

Labeling: Label all cryogen containers with a cryogen warning and the cryogen's name.

Storage: A dewar is an insulated container used to store and transport liquefied gases. It is insulated by a vacuum between its two walls and is equipped with a pressure relief device. Dewars and delivery lines should be inspected for leaks.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling cryogens.

- Cryogens should only be used in well-ventilated areas.
- Do not touch cryogenic materials, or tools in contact with cryogens, with bare skin or disposable gloves. Use tongs and insulated gloves.

Personal Protective Equipment: Reference SDS. Use cryogen handling insulated gloves. A face shield is required for transferring from any pressurized container.

Spill and Decontamination: Reference SDS. For a small spill of cryogenic liquid, evacuate the area, allow ventilation to dissipate the gas, and contact EH&S for oxygen deficiency monitoring prior to reentry.

For large spills, delivery line failures, tank/dewar or delivery failures, or any other uncontrolled release, immediately evacuate the room and pull the fire alarm to evacuate building.

SONOMA STATE UNIVERSITY

Standard Operating Procedure

Flammable Liquids

Hazard Description: Flammable and combustible liquids are those which can ignite when exposed to an ignition source at the flashpoint (lowest temperature at which a material can form an ignitable mixture with air and produce a flame) of the liquid. Flammable liquids are defined as those with a flashpoint less than 100°F, while combustible liquids have a flashpoint greater than 100°F.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Flammable liquids have the following GHS pictogram:

Storage: Storage of flammable liquids must adhere to the requirements outlined in the Chemical Hygiene Plan. Flammable liquids must be stored in flammable liquid storage cabinets or refrigerators and be labeled with the words “Flammable”. No more than 10 gallons of flammable liquids may be stored outside of a flammable liquid storage cabinet, at any time in any room. Do no store near ignition sources. Do not store flammable liquids in chemical fume hoods or allow containers of flammable liquids in proximity to heating mantels, hot plates, or torches.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling flammable liquids:

- Immediately close containers of flammable liquids after use and return to storage cabinet.
- Flammable liquids should be used inside fume hoods.
- Shielding is required any time there is a risk of explosion.
- Remove all flammable and combustible materials from the fume hood or workspace when they are not needed for the immediate task.
- To avoid buildup of static electricity that may cause a spark, bond and ground metal or conductive plastic containers.
- Closed systems outside of the fume hood must be vented to a dedicated exhaust that does not recirculate.

Personal Protective Equipment: When there is a high risk of fire, such as those that use large volumes of highly flammable liquids, open flame, and/or pyrophoric materials, a fire-resistant lab coat and other fire-resistant PPE may be required. Reference SDS.

Spill and Decontamination: Put spill cleanup materials in a flammable waste can. Reference SDS.

SONOMA STATE UNIVERSITY

Standard Operating Procedure

Irritants

Hazard Description: Chemical irritants are materials that cause reversible inflammation or irritation to a body surface, including eyes, respiratory tract, skin or mucous membranes, upon contact. Primary irritants exert no systemic toxic action. The degree of irritation depends on the chemical concentration, duration of contact, and personal factors (health status, sensitization). Be aware that some irritants are sensitizers or have delayed symptoms. Sensitizers are chemicals that can cause an allergic reaction upon repeat low level exposures. Breathing chemical irritant gases can also cause the buildup of fluid in the lungs or can interfere with the exchange of oxygen.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Irritants have the following GHS pictogram:

Storage: Storage of irritants must adhere to the requirements outlined in the Chemical Hygiene Plan.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling irritants:

- Before handing an irritant, understand the irritants symptoms and routes of exposure.
- Immediately close all containers of irritants chemicals after use.
- Fume hoods must be used if there is an inhalation hazard present.
- Use disposable work surface covers (bench protectors) in areas where irritant chemicals are handled to prevent contamination surface.
- Do not dispense volatile irritant chemicals directly onto a laboratory balance in the general lab space. Instead, use sealable pre-tared container inside fume hood, then take the sealed container to the balance. Make all adjustments inside a fume hood.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: Reference SDS.

Standard Operating Procedure

Oxidizer

Hazard Description: Oxidizing chemicals are materials that are not necessarily combustible, may, generally by yielding oxygen, cause or contribute to, the combustion of other material.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Oxidizers have the following GHS pictogram:

Storage: Storage of oxidizers must adhere to the requirements outlined in the Chemical Hygiene Plan. Specially designed corrosion-resistant cabinets should be used for the storage of corrosive materials. If corrosion-resistant cabinets are not available, store on plastic trays. Do not store above eye level. Do not store flammable liquids in chemical fume hoods or allow containers of flammable liquids in proximity to heating mantels, hot plates, or torches.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling oxidizers:

- Immediately close all containers of oxidizers after use.
- Should be used inside a fume hood.
- Perform liquid transfers slowly using a funnel to minimize splash, splatter, and spills.
- Some strong oxidizers will generate heat and/or release gas on contact with water. Understand the potential for reaction with water before diluting a chemical. The water may need to be cooled with continuous stirring while acid is added.
- Reactions involving strong oxidizers are often very exothermic. Use heat-resistant labware and allow extra volume in your vessel to account for expansion and/or foaming. It may be necessary to pre-cool solutions.
- Keep all organic reagents, solvents, paper, and wood away from the area where strong oxidizers will be handled or stored.

Personal Protective Equipment: When there is no hood sash to shield the worker, splash goggles and face shield are required. Specialty gloves are required when prolonged contact or immersion of hands in corrosive liquid is anticipated; when large volumes of corrosive liquids are being transferred; and when adding particularly toxic corrosive chemicals. Reference SDS.

Spill and Decontamination: Use oxidizer specific spill control materials. Never use paper towels or other combustible materials to clean up spills or decontaminate surface. Put spill cleanup materials in a flammable waste can. Reference SDS.

SONOMA STATE UNIVERSITY

Standard Operating Procedure

Peroxide-forming Chemicals

Hazard Description: Peroxide-forming chemicals are a class of materials that can form shock-sensitive and explosive peroxide crystals. When triggered by friction of shock the peroxides can explode. Peroxide-forming chemicals include solids, liquids, and gases. Peroxides form after exposure to air. The rate of peroxide formation is dependent on the specific chemical, the amount of air exposure and whether the chemical contains an inhibitor to retard peroxide formation.

Labeling: Peroxide-formers can have varying GHS pictograms depending on the substance's properties. They may or may not include the following hazard statement: "2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: may form explosive peroxides".

Storage: Storage of peroxide-forming chemicals must adhere to the requirements outlined in the Chemical Hygiene Plan. Peroxide formers must be stored away from light and heat in sealed airtight containers with tight, nonmetal lids. They must be assigned an expiration date based on the storage limitations for the chemical's class and be checked for peroxides every 3, 6, or 12 months depending on the substance's reactivity. Containers must be labeled with dates of receipt, opening, and every time the container is checked for peroxide concentration (see label below) so that the user can dispose of the material according to the recommendations on the MSDS.

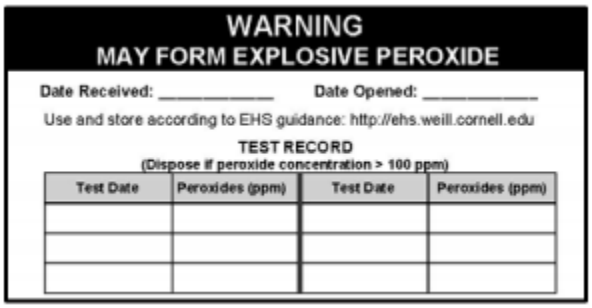
- Class A – Chemicals that form explosive levels of peroxides without concentration. Dispose of three months after opening or before the expiration date if unopened.
- Class B – Chemicals that form explosive levels of peroxides when concentrated through distillation evaporation or exposure to air after opening. Dispose of one year after opening or before the expiration date if unopened.
- Class C – Chemicals which are a hazard due to peroxide initiation of polymerization. Dispose of one year after opening or before the expiration date if unopened.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling PEC's.

- Immediately close all containers of peroxide-forming chemicals after use.
- Never use peroxide-forming chemicals that have expired.
- Work in a glovebox or a fume hood with sash closed as much as possible.
- Any peroxidizable chemical with visible discoloration, crystallization, multiple layers, or liquid stratification should be treated as potentially explosive. Contact EH&S immediately.
- Never distill peroxide-formers to dryness. When possible, adding a non-volatile organic compound can dilute the peroxides remaining after distillation.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: Reference SDS.



WARNING
MAY FORM EXPLOSIVE PEROXIDE

Date Received: _____ Date Opened: _____

Use and store according to EHS guidance: http://ehs.weill.cornell.edu

TEST RECORD
(Dispose if peroxide concentration > 100 ppm)

Test Date	Peroxides (ppm)	Test Date	Peroxides (ppm)

SONOMA STATE UNIVERSITY

Standard Operating Procedure

Potentially Explosive Compounds (PEC's)

Hazard Description: PEC's can become explosive over time as a result of contamination, concentration, evaporation, or loss/decomposition of chemical inhibitors. An explosive is any chemical compound or mechanical mixture that, when subject to heat, impact, friction, detonation, or other suitable initiation, undergoes rapid chemical change, evolving large volumes of highly heated gases – typically N_2 or CO_2 – that exert pressure on the surrounding medium. The term applies to materials that either detonate or deflagrate. Before using any PEC, it is essential to understand the potential triggers which leads to explosion or violent decomposition.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. In general explosives have the following GHS pictogram; however not all PEC's carry this symbol.

Storage: Storage of PEC's must adhere to the requirements outlined in the Chemical Hygiene Plan. PEC's may require a dedicated refrigerator or blast cage reinforced desiccators. If you find an explosive chemical container that is damaged, bulging, past expiration, leaking or otherwise compromised in any way, do not handle the container. Move away from the area and prevent others from entering the area. Contact EH&S immediately.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling PEC's.

- Never return excess chemicals to the original container. Small amount of impurities may be introduced into the container which may cause a fire or explosion.
- Immediately close all containers of PCE's after use and return them to storage location.
- Work in a glovebox or fume hood with sash closed as much as possible.
- The use of blast shield may be necessary in certain cases.
- Avoid use of metal spatulas and needles when working with compounds for which metal ions may catalyze explosive decomposition reactions.
- Avoid the use of ground-glass joints when working with compounds for which friction or mechanical shock may trigger explosion.

Personal Protective Equipment: Cotton or other static-reducing gloves should be considered when working with static-sensitive PEC's. Reference SDS

Spill and Decontamination: Avoid dry sweeping into metal dustpan if PCE is shock sensitive or react with metals. Reference SDS.

Standard Operating Procedure

Pyrophoric Chemicals

Hazard Description: Pyrophoric liquids and solids are defined as such when they are liable to ignite within five minutes after coming into contact with air, even when in small quantities. Pyrophoric gases will ignite spontaneously in air at or below 130° F.

Labeling: Pyrophoric liquids and solids are classified as a Category 1 flammable (pyrophoric gases are classified as Category 1A flammable gas) and will have the following GHS pictogram:

Storage: Storage of pyrophoric chemicals must adhere to the requirements outlined in the Chemical Hygiene Plan.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling pyrophoric chemicals.

- Never return excess chemicals to the original container. Small amount of impurities may be introduced into the container which may cause a fire or explosion.
- Must be handled in a signed, designated area.
- Must be used in a fume hood if inhalation hazard is present.
- Consider using disposable work surface covers (bench protectors) and dispose daily.
- Immediately close all containers of pyrophoric chemicals after use.
- Do not dispense pyrophoric chemicals directly onto a laboratory balance in the general lab space. Instead, use sealable pre-tared container to hold material while using balance.

Personal Protective Equipment: Reference SDS. Unless working in a glove box, it is highly recommended that a fire-resistant lab coat be worn while manipulating quantities of pyrophoric liquids over 10 mL or solids over 1 gram. Consider the use of Nomex/Leather polit's gloves, which provide fire resistance without compromising manual dexterity. These gloves should be worn over nitrile gloves and are recommended during syringe/cannula transfers of pyrophoric liquids.

Spill and Decontamination: For spills of solid materials, do not dry sweep. Decontamination procedures vary depending on the material being handled. Reference SDS. All surfaces and equipment should be wiped with the appropriate cleaning agent following dispensing or handling to prevent accumulation of acutely toxic chemical residue.

Standard Operating Procedure

Reproductive Toxins

Hazard Description: Reproductive hazards are substances which affect the reproductive capabilities including chromosomal damage (mutagens), affect the fetus (teratogens), affect the sexual function and fertility in adults, and/or affect the development of offspring.

Labeling: Labeling must adhere to the requirements outlined in the Chemical Hygiene Plan. Reproductive Toxins have the following GHS "Health Hazard" pictogram:

Storage: Storage of reproductive toxins must adhere to the requirements outlined in the Chemical Hygiene Plan.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling reproductive toxins:

- Must be handled in a signed, designated area of the laboratory.
- Reproductive toxins should be used inside fume hoods or if necessary, a glove box.
- Use disposable work surface covers (bench protectors) in areas where reproductive toxins are handled to prevent contamination of work surface.
- Immediately close all containers of reproductive toxins after use.
- Do not dispense reproductive toxins directly onto a laboratory balance in the general lab space. Instead, use sealable pre-tared container inside fume hood, then take the sealed container to the balance. Make all adjustments inside a fume hood.

Personal Protective Equipment: Reference SDS.

Spill and Decontamination: Reference SDS.

Standard Operating Procedure

Water-Reactive Chemicals

Hazard Description: Water-reactive chemicals are those chemicals, when in contact with water, may emit flammable gases that can form explosive mixtures with air. Such mixtures are easily ignited by ordinary sources of ignition and may result in a blast wave and flames. Some water-reactive chemicals can react vigorously with water to rapidly produce gases which are deadly at low concentrations.

Labeling: The term used for these chemicals by GHS is: "Chemicals Which, in Contact with Water, Emit Flammable Gas". Water-reactive chemicals are labeled with the following pictogram:

Storage: Storage of water-reactive chemicals must adhere to the requirements outlined in the Chemical Hygiene Plan. Water-reactive chemicals must not be stored with aqueous (water-containing) solutions, or near other sources of water such as sinks, water baths, or recirculating chillers. Do not store water-reactive chemicals with flammable materials or in a flammable liquid storage cabinet. Store water-reactive chemicals away from ignition sources.

Handling: In addition to the requirements outlined in the Chemical Hygiene Plan the following should be considered when handling PEC's.

- Never return excess chemicals to the original container. Small amount of impurities may be introduced into the container which may cause a fire or explosion.
- Immediately close all containers of PCE's after use and return to their storage location.
- Work in a glovebox or fume hood with sash closed as much as possible.
- Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction.
- Remove combustible and flammable materials and sources of ignition from the work area.
- Use fresh, dry solvents and thoroughly dried glassware.

Personal Protective Equipment: Reference SDS. Unless working in a glove box, it is recommended a fire-resistant lab coat be worn while manipulating large quantities of water-reactive liquids. Consider the use of Nomex/Leather polit's gloves over nitrile gloves.

Spill and Decontamination: Reference SDS. Once spilled, certain liquid or solid water-reactive chemicals may ignite. Use an appropriate extinguishing agent (do not use water). Do not use water to clean up spills or decontaminate a surface or equipment. Instead use wipers with a dry, non-polar solvent. Be sure all ignition sources are secured before beginning cleanup.

SONOMA STATE UNIVERSITY

Appendix B: The Use of Personal Protective Equipment at Sonoma State University

SONOMA STATE UNIVERSITY

SONOMA STATE UNIVERSITY

Date: March 2020

From: Ruth LeBlanc, Director of Environmental Health and Safety

Subject: The Use of Personal Protective Equipment at Sonoma State University

Although the University environment is often considered a casual working environment, there is a minimum level of daily attire that is appropriate for many areas at the University. This level of clothing is not to be confused with Personal Protective Equipment (PPE), which is outlined below.

While PPE requirements are often outlined in Safety Data Sheets (SDS's), daily attire is not typically addressed. However, OSHA does require that employers provide a safe working environment for their employees. California OSHA addresses this in a general manner in the General Industry Safety Orders in Section 3383(b), which in part states, "Clothing appropriate for the work being done shall be worn." The publication *Prudent Practices in the Laboratory* produced by the National Research Council, has become an industry standard, is incorporated in the University's Chemical Hygiene Plan, and is widely recognized by OSHA as detailing acceptable practices. Appropriate daily wear is detailed in *Prudent Practices in the Laboratory* as:

- Clothing that fully covers the body.
- Shoes that cover the entire foot, provide a stable platform, and have rubber or similar slip resistant soles.
- Socks that cover the ankle.
- Lab coats (considered PPE).

The manager or supervisor who oversees the area should review daily attire for science lab areas (any areas where lab type work is being performed or chemicals are being stored) for appropriateness to ensure that increased levels of clothing or PPE are not required. For instance, when working with pyrophoric chemicals, lab coats and other clothing should be made of flame-resistant materials. Employees who are not dressed in appropriate daily wear shall not be permitted to work in lab environments.

Personal Protective Equipment is equipment or clothing that the employees would not typically wear when they leave the work area, and would include items like lab coats, eyeglasses, face shields, aprons, and like equipment. Proper selection of PPE requires a hazard evaluation be completed, employees (including student employees) be trained on proper wear and care of PPE, and that the employer provide PPE at no cost to the employees.

SONOMA STATE UNIVERSITY

Appendix C: Project Hazard Analysis & Standard Operating Procedure for Laboratory Processes

SONOMA STATE UNIVERSITY

Project Hazard Analysis (PHA) & Standard Operating Procedure (SOP) for Laboratory Processes

1. *Use this form to perform a documented PHA and SOP for tasks that necessitate the use of Personal Protective Equipment (PPE)*
2. *Sign and submit to EH&S for approval*
3. *Provide training and document on a training roster (see attached)*
4. *Maintain this documentation until the project or task is no longer being performed.*

Section A: General Information

Chemical Name or Process:	Click here to enter chemical name or process you will be performing.
Purpose:	Click here to enter a brief description of the process and the chemical(s) with which you will be working.
Potential Hazards/Toxicity:	Click here to enter all chemicals and/or hazardous equipment you will be using. Use (M)SDS, see Section 2 (or relevant section) for hazard info. For research: see note above and use other sources as appropriate for hazardous materials and methods.
Engineering Controls:	Click here to enter text. Fume hood, guards, or other controls

Section B: Personal Protective Equipment (PPE)

Hand Protection:	Click here to enter gloves necessary after using resources below.

NOTE: Consult with your preferred glove manufacturer, the (M)SDS and other sources to ensure that the gloves you plan on using are compatible with chemical(s) being used.

Refer to glove selection chart from the links below:
http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf
https://www.allsafetyproducts.com/hand-protection-gloves.html

Eye Protection:	Do you need safety glasses or goggles?

Safety glasses or chemical splash goggles, as directed by advisor/P.I. Goggles are required whenever there is a potential for a hazardous liquid splash, as per the Chemical Hygiene Plan.

Skin and Body Protection:	Lab personnel working with the chemicals need to wear full-length pants or its equivalent, closed-toe footwear with no skin being exposed, and a lab coat.
Hygiene Measures:	Wash hands after working with the hazardous substances and when leaving the lab/shop.

Respirators may be required under any of the following circumstances:	• As a last line of defense (i.e., after engineering and administrative controls have been exhausted). • When Permissible Exposure Limit (PEL) will or may be exceeded, or the airborne concentration is unknown. • Regulations require the use of a respirator. • There is potential for harmful exposure due to an atmospheric contaminant (in the absence of PEL) • As PPE in the event of a chemical spill clean-up process

Prior to obtaining a respirator, an exposure assessment of the process or procedure must be conducted. If respiratory protection is required, then lab personnel must obtain respiratory protection training, a medical evaluation, and a respirator fit test through EH&S. This is a regulatory requirement.

Section C: First Aid Procedures for Chemical Exposures

If inhaled:	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, seek medical attention. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
In case of skin contact:	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention, as necessary.
In case of eye contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Get medical attention.
If swallowed:	Enter text here from (M)SDS -Section 16: Labeling Information

Section D: Special Handling and Storage Requirements

See (M)SDS Section 7 for storage and handling instructions for chemicals used. Note any deviations from regular lab use here, i.e store in fume hood, flammable cabinet, air sensitive, etc.

SONOMA STATE UNIVERSITY

Project Hazard Analysis (PHA) & Standard Operating Procedure (SOP) for Laboratory Processes

Section E: Spill and Accident Procedure

Spill:	Assess the extent of danger. Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. If safe, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).
Small (<1 L):	If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material. Double bag spill waste in plastic bags, label and arrange hazardous waste pick-up.
Large (>1 L):	Evacuate spill area. Dial 911 and EH&S at (707)664-5555 for assistance. Remain available in a safe, nearby location for emergency personnel.
Chemical Spill on Body or Clothes:	Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. *Notify supervisor, advisor or P.I. immediately.*
Chemical Splash into Eyes:	Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for a minimum of 15 minutes by forcibly holding the eye open. Seek medical attention. *Notify supervisor, advisor or P.I. immediately.*
Needle stick/puncture exposure:	(as applicable to chemical handling procedure) – Wash the affected area with antiseptic soap and warm water for 15 minutes. For mucous membrane exposure, flush the affected area for 15 minutes using an eyewash station. Seek medical attention. *Note: All needle stick/puncture exposures must be reported to supervisor, advisor or P.I. and EH&S office immediately.*

Medical Emergency Dial 911 and EH&S at (707)664-5555

Life Threatening Emergency, After Hours, Weekends and Holidays – Dial 911

Note: All serious injuries must be reported to Supervisor/PI within 8 hours. Note: Any and all loss of consciousness requires a 911 call

Non-Life-Threatening Emergency –

- Students: Seek medical attention at the campus Health Center during hours of operation
- Emergency Medical services in the community are available at any time at hospital emergency rooms and some emergency care facilities.

All injuries must be reported to PI/Supervisor immediately and follow campus injury reporting.

Section F: Decontamination/Waste Disposal Procedure

Click here to enter text if different than outlined below	
General hazardous waste disposal guidelines:	
Label Waste	Affix a hazardous waste tag on all waste containers as soon as the first drop of waste is added to the container. Waste labels can be found on the EH&S website here

Project Hazard Analysis (PHA) & Standard Operating Procedure (SOP) for Laboratory Processes

Store Waste	• Store hazardous waste in closed containers, in secondary containment and in a designated location • Double-bag dry waste • Waste must be under the control of the person generating & disposing of it
Dispose of Waste	• Dispose of regularly generated chemical waste as per guidelines on EH&S website here • Prepare for transport for pick-up. Use secondary containment.
Empty Containers	• Dispose as hazardous waste if container once held extremely hazardous waste (irrespective of the container size) A list can be found at: CCR List of Extremely Hazardous Waste • All other containers are legally empty once a concerted effort is made to remove, pour out, scrape out, or otherwise completely empty the vessel. These may be disposed of as recycling or common trash as appropriate.

Call EH&S at (707)664-5555 for questions.

Section G: Safety Data Sheet (SDS) Location

Online SDS can be accessed at: MSDS Online

Section H: Lab Specific Protocol

Click here to enter lab specific Protocol as needed

***NOTE:** Any deviation from this SOP requires approval from PI.*

Approvals:

P.I. or Supervisor Name:	Click here to enter name.
Signature:	
Date:	Click here to enter a date.

EH&S Name:	Click here to enter name.
Signature:	
Date:	Click here to enter a date.

SONOMA STATE UNIVERSITY

Project Hazard Analysis (PHA) & Standard Operating Procedure (SOP) for Laboratory Processes

Documentation of Training (signature of all users is required)

- The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.
- Training must be administered by PI or Lab Manager to all personnel in lab prior to start of work with particularly hazardous substance or newly synthetic chemical listed in the SOP.
- Refresher training will need to be provided when there is a change to the work procedure, an accident occurs, or repeat non-compliance.

I have read and understand the content, requirements, and responsibilities of this SOP:

Name	Signature	Date

SONOMA STATE UNIVERSITY

Appendix D: Unattended Lab Experiment Sign Template

SONOMA STATE UNIVERSITY

Sonoma State University, Department of _____-_____

EMERGENCY CONTACT INFO

PRIMARY (Dept. Chair): _____

SECONDARY (PI): _____

Research Student(s): _____

University Police Department: 664-4444

INFO FOR EXPERIMENT IN PROGRESS

DATE POSTED:_____**ROOM(PHSC):**_____ **HOOD:**_____

HAZARDS (check all that apply)

❑ Low Hazard	❑ Reactive with Water_____
❑ Acid_____	❑ Reactive to Shock_____
❑ Base_____	❑ Inhalation Hazard_____
❑ Oxidizer_____	❑ Toxic (if swallowed)_____
❑ Flammable_____	❑ Biohazard_____
❑ Heavy Metal_____	❑ Radioactive_____
❑ Reactive with Air_____	❑ Compressed Gas_____

Contents (general or specific):_____

Notes:

SONOMA STATE UNIVERSITY

Appendix E: Hazardous Material Emergency Information Sheet

SONOMA STATE UNIVERSITY

HAZARDOUS MATERIALS EMERGENCY INFORMATION

FIRES: In the event of a fire, leave the area immediately and call 911. Pull a fire alarm on your way out of the area. Fire extinguisher use is not required or expected by any employee. However, if a fire extinguisher is available and if you have been trained on how to use one, they can be used on a small fire in its incipient stage.

CHEMICAL SPLASHES: If chemicals get splashed into your eyes or on your body, immediately rinse and/or flush the affected area with water using the emergency eyewash or emergency shower as applicable. Continue to flush the affected area for 15 minutes while someone else calls 911 and retrieves the Material Safety Data Sheet (MSDS) for the material involved.

INGESTION OF CHEMICALS: If chemicals are accidentally ingested, call 911 immediately and stay in communication with the operator. Be able to identify the materials which were ingested. Retrieve the Material Safety Data Sheet (MSDS) for the material involved.

CHEMICAL SPILLS AND RELEASES

LARGE SPILLS AND / OR HIGH HAZARD SPILLS: For large spills or spills of highly hazardous materials, leave the area immediately and call 911. Pull a fire alarm on your way out if evacuation of the building is necessary to prevent injury to others.*
NOTE: The EH&S department is not a hazmat spill cleanup team but will coordinate with a vendor who will respond to hazmat spills on campus as necessary.

SMALL SPILLS AND/OR LOW HAZARD SPILLS: Only attempt to clean up spills for which you have the appropriate equipment, training, and level of comfort. For advice and/or help with non-emergency spills, call Environmental Health and Safety (EH&S) at 664-4444. Hazardous wastes resulting from spills or spill cleanup activities need to be packaged in sealed containers and labeled promptly with hazardous waste labels.

COMPRESSED GASES: These all pose a hazard of sudden release of pressure. Following such a release, the cylinders or tanks can be cold enough to freeze skin. More importantly, depending on their contents, fire or toxic inhalation hazards can exist. Leave the area immediately and call 911. Pull a fire alarm on your way out if evacuation of the building is necessary to prevent injury to others.*

PHONE NUMBERS
Emergencies ---------- 911
University Police ---------- 664-4444
Poison Control Center ---------- 1(800)222-1222
Environmental Health and Safety ---------- 664-2100

*** Minimum evacuation distance is at least 100 feet from the affected building**

SONOMA STATE UNIVERSITY

Appendix F: Safety Information Card

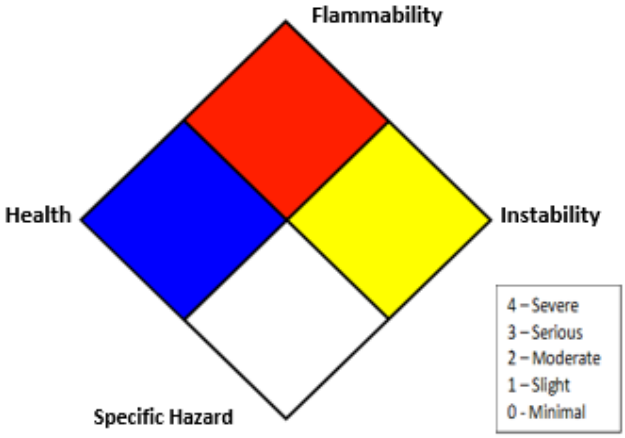
SONOMA STATE UNIVERSITY
SAFETY INFORMATION CARD

DEPARTMENT: EXT: 664- DATE:
Faculty Responsible: Office Phone: 664-
Lab Tech: Office Phone: 664-
Staff: Office Phone: 664-

HAZARDOUS CONDITIONS

CHEMICAL HAZARDS

- ☐ Air/Water Reactive
- ☐ Carcinogens
- ☐ Corrosives
- ☐ Flammable/Ignitable Liquids
- ☐ Gas Cylinders
  - ☐ Flammable
  - ☐ Poison
- ☐ Oxidizers
- ☐ Poisons
- ☐ Waste Chemicals



BIOHAZARDS

- ☐ Level 1 (low)
- ☐ Level 2 (moderate)
- ☐ Level 3 (high)

PERSONAL PROTECTION

- ☐ Safety Glasses/Goggles
- ☐ Gloves (type):
- ☐ Face Shield
- ☐ Apron/Lab Coat

RADIATION HAZARDS

- ☐ Laser Class:
- ☐ Microwave
- ☐ Radioactive Materials
- ☐ Radioactive Source
- ☐ X-Ray
- ☐ Other

SAFETY EQUIPMENT

☐ Eyewash Station	☐ Safety Shower	☐ Fume Hood	☐ Fire Extinguisher

Campus Emergency	**911**
University Police	**(707)664-4444**
Facility Management	(707)664-2317
Poison Control Center	(800)222-1222
Sonoma State EH&S	(707)664-2100

NO FOOD OR DRINK ALLOWED IN ANY LAB/STUDIO WHERE CHEMICALS OR BIOLOGICALS ARE PRESENT

***Refer to the EH&S website for the instruction and Safety Information Card Template.**

SONOMA STATE UNIVERSITY

Appendix G: Student Safety Training

PROCEDURE – STUDENT SAFETY TRAINING

Scope

All students participating in academic activities that require the use of Personal Protective Equipment (PPE) to protect against chemical or other safety risk. Students performing any academic activity that requires the use of Personal Protective Equipment (PPE) to protect against chemical or other safety risk, shall receive safety training by their faculty concerning the potential hazard(s), the proper use of the PPE, safety features in the laboratory, and what actions to take in the event of an accident, injury or spill. Examples of PPE include, but are not limited to, gloves, goggles, safety glasses, lab coats, closed toe shoes, and hearing protection.

The student instruction shall include information about the general chemical, biological and/or other safety hazards that are being controlled by the PPE as well as information about accessing and understanding specific data for individual hazards that may arise in the planned activities as the semester progresses. Students should be aware of where all Safety Data Sheets concerning chemicals utilized at SSU. Click here to be taken to the site.

Following the safety training, students required to wear PPE shall sign a Student Safety Training Acknowledgement Form (SSTAF) or an equivalent form approved by EH&S, demonstrating that they have received proper laboratory safety training. If an equivalent form is used, the form must meet or exceed the content in the SSTAF. The safety training shall be performed by the instructor and documented by the student by signing the SSTAF prior to engaging in any activity that requires PPE.

The instruction required by this policy shall be conducted for each class, each semester, whether or not the student has received it for any other classes.

Responsibilities

Instructors: The instructor of record for a course utilizing PPE is responsible for ensuring students are familiar with and properly using required protective devices. Additionally, where the Student Safety Training is applicable, the instructor is responsible to ensure all enrolled students have received the training and are required to forward signed training acknowledgement forms to department offices. See the Student Safety Training and Acknowledgement form attached.

Academic Departments: Will identify a point person(s) who is (are) responsible to collect, record, retain, and update the SSTAF. The department point person will ensure that the SSTAF is reviewed annually and that the student-signed SSTAF is maintained by the department, as per the Sonoma State University records retention schedule. The revised retention schedule is three years plus current.

Deans' Offices shall maintain a record of the names and contact information of the point persons for all departments and confirm that the Departmental procedures for the SSTAF are reviewed annually.

Environmental Health & Safety: Shall work with department chairs and college deans to assist in identifying courses requiring PPE, approving alternative SSTAF forms and processes, and can act as an advisory body as to what type of training will be offered to students. EH&S will conduct an annual review of the SSTAF by selecting a random sample of courses within each applicable department, to ensure compliance with the SSTAF and retention schedule. The random sample will consist of a minimum of 5 classes or 10% whichever is greater. A comparative analysis of class rosters to the signed forms will be conducted. Any findings will be provided to the School Dean, Administrative Manager and Department Chairperson for corrective action implementation.

SONOMA STATE UNIVERSITY

Student Safety Training

Required for everyone working in laboratory or studio areas

Applicability/Scope

This training applies to any student that may encounter chemical or physical hazards requiring the use of Personal Protective Equipment (PPE). Examples where this training is applicable are:

- Chemistry labs
- Biology labs
- Art studios (painting, etching, photography, metal/wood shop, lithography, ceramics)
- Engineering
- Anthropology
- Geology

Safety Tenets

Ensuring laboratory/studio safety is not just the responsibility of the instructor, it is the responsibility of everyone. You are expected to be familiar with the safety rules and to conduct your laboratory/studio work in a safe manner at all times. The instructor will review the following safety rules and regulation with you and will point out the location and operation of the safety equipment (e.g. emergency eyewash stations), Safety Data Sheets (SDS) for chemicals and other available safety equipment. These Safety Rules apply to all students, faculty, staff and admin at Sonoma State University.

Chemical Hygiene

a. Whenever you are working with chemicals one should always be properly protected.
    1. Wear gloves.
    2. Wear goggles.
    3. Work under fume hood.
    4. Wear a lab coat or other protection.
    5. Long hair must be tied back.
    6. Only wear closed toed shoes.
b. For chemical information refer to the **SDS** found in the lab.
c. No Chemicals or equipment may be removed from the laboratory. DO NOT take anything from one lab to another.
d. Do not waste chemicals by taking excessive amounts. Discard excess chemicals in waste containers.
e. Close all chemical containers tightly and return them to their proper shelves after each use. Place all hazardous wastes in proper receptacles. **READ THE LABELS**
f. Clean all equipment and glassware promptly after each use to avoid accidental exposure or injury to others.
g. Transport liquids in containers with absorbent.

Food

Eating or drinking are not allowed in lab or studio areas where chemicals are stored or used.

Personal Hygiene

a. Wash promptly with running water if skin contact is made with any chemical.
b. Wear appropriate eye protection.
c. Do not do sniff tests.
d. Do not mouth pipette anything.
e. Wash hands well, before leaving the lab.
f. No eating, drinking or smoking in any laboratory/studio.
g. Do not bring food, beverages or tobacco products into chemical storage or use areas. Food, drink and especially tobacco absorb chemical vapors and gasses from the air.
h. **NEVER PUT ANY CHEMICAL OR PIECE OF EQUIPMENT IN YOUR MOUTH.**

Protective Clothing and Equipment

Personal protective equipment is provided by Sonoma State when and where necessary. It is the responsibility of each student, faculty, staff or admin to be certain that the appropriate equipment is worn.

- Equipment Available: Eyewear, Aprons, Lab Coats, Gloves, Ear Protection, Dust Masks, Fume hoods
- *WORK WILL NEVER BEGIN UNTIL ALL POTENTIAL BYSTANDERS ARE ALSO PROPERLY ATTIRED.*
- Jewelry or ornamentation that could be caught by equipment or interfere with lab work must be removed.

Housekeeping

A clean work area is much safer than a cluttered or dirty one. Some things to strive for:

a. Keep aisles, hallways, doorways and stairs clear of all chemicals and tanks and boxes.
b. Keep all work areas and especially workbenches clear of clutter and obstructions.
c. All work surfaces and floors should be cleaned regularly.
d. Access to emergency equipment, showers, eyewashes, and exits must NEVER be blocked or obstructed.
e. Wastes should be kept in the proper containers and labeled properly.
f. Any unlabeled containers are considered wastes by the end of a workday.
g. Clean up spills promptly.
h. Place broken glass in broken glass boxes.

Immediately check with lab instructor when:

1. There is a new procedure, process or test, even if it is very similar to older practices.
2. There is a new change or substitution of any of the ingredient chemicals in a procedure.
3. There is a failure of any of the equipment used in the process, especially safeguards such as fume hoods or clamp apparatus.
4. There are unexpected test results. When a test result is different than the predicted outcome.
5. When members of the staff become ill, suspect exposure, smell chemicals, or otherwise suspect a failure of engineered safeguards.
6. Spills occur.

SONOMA STATE UNIVERSITY

RESTRICTIONS

Student assistants are not allowed to:

1. Move gas cylinders, change or adjust regulators
2. Clean up mercury spills
3. Access hazardous chemical stores or cabinets
4. Provide equipment or chemicals to students, faculty, or other departments without prior instruction
5. Authorize access to stockrooms or lab rooms

****

I. Know the location of the, eyewash, emergency shower, first aid kit, fire extinguisher and telephone/fire alarm box. Your instructor will tell you how and when to use them.

II. Students are not allowed to work alone in a laboratory until being thoroughly checked out on relevant operations of equipment, procedures and obtaining their supervisors consent

III. **DO NOT** throw broken thermometers into the trash or broken glass receptacles!!!!

IV. Report all accidents and injuries to your supervisor. Laboratory injuries will be treated at the student health center.

V. Employees will become familiar with MSDSs for chemicals they will work with **BEFORE** beginning work

ACKNOWLEDGEMENT

****

I AM AWARE OF AND UNDERSTAND THE ABOVE INSTRUCTIONS AND PROCEDURES

Name (Print)	ID #

_____ _____

Signature Date

SONOMA STATE UNIVERSITY

EH&S Audit - Student Safety Training & Acknowledgement Form

Date:		Auditor:	
Department:		Course:	
Instructor:		Semester:	

Audit Criteria

1.	Is the Department retaining the SSTAF according to the retention policy of 3-years plus current?	Yes ☐ No ☐
2.	Is the Department utilizing the SSTAF form provided by EH&S?	Yes ☐ No ☐
3.	If the Department is using their own form, has it been approved by EH&S?	Yes ☐ No ☐
4.	What is the number of courses that require the use of the SSTAF in the Department?	#:
5.	How many forms were reviewed (requirement of 10% or min. of 5)?	#:
6.	Was a comparison of course rosters and completed/signed SSTAF forms conducted?	Yes ☐ No ☐
7.	Were any discrepancies identified in the comparison? If yes, explain:	Yes ☐ No ☐
8.	Were the discrepancies communicated to the Dean of the School and Dept. Chair?	Yes ☐ No ☐ N/A ☐
9.	How were discrepancies communicated?	Email ☐ Verbal ☐ N/A☐
10.	Were the discrepancies resolved by the Department and communicated to EH&S? *(attach documentation to this form)*	Yes ☐ No ☐ N/A ☐ Date Resolved: Click or tap to enter a date.

The signature below confirms that audit is completed and discrepancies resolved.

Signature of EH&S Representative

Date

SONOMA STATE UNIVERSITY

Appendix H: SSU Laboratory Clearance for Departing Researchers

SONOMA STATE UNIVERSITY

Sonoma State Laboratory Clearance for Departing Researchers

This applies to students, faculty and staff that are leaving the University or no longer participating in research or lab work. This does not apply to personnel who take a break between semesters.

Name: Department:

PI or Administrator: Reviewer:

Items to be Completed - If an item does not apply, mark N/A in the Date Completed column	**Date Completed**
All chemical waste, chemical substances (buffers, kits, media, solutions, samples, etc.) have been labeled properly and/or disposed	
Waste accumulation areas are free of waste	
All cabinets, shelving, fume hood or other storage areas have been cleared/cleaned of chemicals	
All freezers, cold rooms, equipment room or shared spaces have been cleared of equipment and chemicals	
Any chemicals, solutions, or containers of materials for use by your lab group are appropriately labeled with the name of the material(s) in the container, and the hazards	
All cabinets, shelving, fume hood or other storage areas have been checked and materials that your lab group will no longer use have been removed and appropriately handled	
All surfaces, including the inside and outside of the fume hood, benchtops, sinks, and cabinets have been decontaminated and cleaned	
All sharps containers and broken glass containers have been closed and disposed of appropriately	
All important files, journals, folders, lab notebooks, spectra, etc. have been organized and labeled for archiving and future reference	
Unwanted items have been recycled and/or disposed of appropriately	
Biohazardous Materials	
All biohazardous waste has been disposed of in the proper manner	
All samples have been cataloged and transferred or removed for disposal from freezers, cold rooms	
Radioactive Materials	
All radioactive waste has been properly prepared for disposal. The Radiation Safety Officer (RSO) and EH&S has been contacted. Radioactive materials no longer needed have been identified and communicated to the RSO	
All working surfaces, including equipment and tools, have been checked for contamination. A record of the survey has been submitted to the RSO.	
All dosimetry badges have been returned to the RSO.	