

**CALIFORNIA STATE UNIVERSITY,
LOS ANGELES**

HAZARD COMMUNICATIONS PROGRAM

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PROGRAM APPROVAL AND AUTHORIZATION

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1.0. PURPOSE:

This document establishes procedures and provides the necessary information for employees, regarding chemical hazards and other hazardous substances. It provides detailed safety guidelines and instructions for receipt, use and storage of chemicals on campus by employees, faculty, students and contractors. In addition to outlining safety steps and procedures this plan provides training information, chemical inventory, labeling procedures, and other information considered important.

2.0. SCOPE:

This Program is administered at the University level by the Risk Management / Environmental Health and Safety Office (RM/EHS) in consultation with the Chemical Safety Officer, the Biological Safety Officer, the Radiation Safety Officer, and appointed representatives. This plan applies to any hazardous substance, which is known to be present in the work place in such a manner that employees may be exposed under normal conditions of use or in a reasonably foreseeable emergency resulting from workplace operations.

3.0. AFFECTED EMPLOYEES:

All University units that use, handle, or store hazardous substances and all employees, who, while working come into contact or have the possibility of exposure to hazardous substances.

4.0. REFERENCES:

4.1. [Title 8, California Code of Regulations \(CCR\), Section 5194 – Hazard Communications.](#)

4.2. [Title 8, CCR, Section 339 - Hazardous Substance List.](#)

4.3. Title 16, Code of Federal Regulations (CFR), Section 1500.44.

4.4. [Title 29, CFR, part 1910.](#)

4.5. California Health and Safety Code, Section 25249.

4.6. [California State University, Los Angeles \(Cal State LA\) Chemical Hygiene Plan.](#)

5.0. DEFINITIONS:

5.1. Chemical - Any element, chemical compound or mixture of elements and / or compounds.

5.2. Combustible liquid - Any liquid having a flash point greater than 199.4°F (93°C).

5.3. Compressed gas - Any compound that exhibits one (1) of the following characteristics.

1. A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F.
2. A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130° F regardless of the pressure at 70° F.
3. A liquid having a vapor pressure exceeding 40 psi at 100° F.

5.4. Container - Any bag, barrel, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

5.5. Designated representative - Any individual or unit who gives an employee written authorization to exercise such employee's rights under this section. A recognized or certified collective

bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

- 5.6. Employee - A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers who encounter hazardous chemicals only in non-routine, isolated instances are not within the scope of this program.
- 5.7. Explosive - A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to a source of ignition or chemical change.
- 5.8. Exposure or exposed - An employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. Subjected in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).
- 5.9. Flammable - A chemical that falls into one (1) of the following categories.
 1. "Aerosol, flammable" means an aerosol that yields a flame projection exceeding eighteen (18) inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.
 2. "Gas, flammable" means:
 - a) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen percent (13%) by volume or less.
 - b) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve percent (12%) by volume, regardless of the lower limit.
 3. "Liquid, flammable" means any liquid having a flash point below 100° F, except any mixture having components with flash points of 100° F or higher, the total of which make up ninety-nine percent (99%) or more of the total.
 4. "Solid, flammable" any solid, other than a blasting agent or explosive, as defined in Title 8, CCR, Section 5237, or that is liable to cause a fire through friction, absorption of moisture spontaneous chemical change, or will retain heat from manufacturing, or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be flammable solid if, when tested by the method described in Title 16, CFR, Part 1500.44, it ignites and burns with a self-sustained flame at a greater than one-tenth of an inch per second along its major axis.
- 5.10. Flash point - The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite.
- 5.11. Hazardous chemical - Any chemical that is a physical hazard or health hazard.
- 5.12. Hazardous substance exemptions - This program does not apply to the following hazardous substances.
 1. Hazardous waste.
 2. Tobacco products.
 3. Wood products.
 4. Manufactured items that do not release or have any hazardous exposure.
 5. Food, drugs, or cosmetics.
 6. Products purchased by the University in the same form, approximate amount, concentration, and use as sold to retail consumers.

- 5.13. Hazard warning - Any words, pictures, symbols, or combination appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). See the definitions for “physical hazard” and “health hazard” to determine the hazards which must be covered.
- 5.14. Health hazard - A chemical for which there is evidence that acute or chronic health effect may occur to exposed employees. The term “health hazard” includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system and agents which damage the lungs, skin, eyes, or mucous membranes. Health hazard chemicals are specified in Title 29, CFR, Part 10, subpart Z and in Title 8, CCR, Section 339 (Director’s List – Proposition 65).
- 5.15. Identity - Any chemical or common name, which is indicated on the safety data sheet (SDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, using the label and the SDS.
- 5.16. Immediate use - The hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.
- 5.17. Label - Any written, printed, or graphic material displayed on or affixed to containers of hazardous substances.
- 5.18. SDS - Written or printed material concerning a hazardous chemical that is prepared in accordance with the Globally Harmonized System (GHS).
- 5.19. Mixture - Any combination of two (2) or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
- 5.20. Oxidizer - A chemical other than a blasting agent or explosive as defined in, Title 8, CCR, Section 5237 (a) that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
- 5.21. Physical hazard - A substance for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), self-heating, corrosive to metal, water reactive or other gases. Physical hazards are listed in Title 29, CFR, Part 1910.1200.
- 5.22. Unstable (reactive) - A substance which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, addition of water, or temperature.

6.0. RESPONSIBILITIES:

6.1. The President:

- 6.1.1. Has the ultimate responsibility for hazardous communication compliance within Cal State LA.
- 6.1.2. Shall delegate administration of the provisions of this plan to the RM/EHS, Chemical Safety Officer, Biological Safety Officer, and Radiation Safety Officer.
- 6.1.3. Will provide continuing support for the execution of the Hazard Communication Program.

6.2. RM/EHS shall:

- 6.2.1. Have the primary responsibility for developing, implementing, and monitoring the Hazard Communication Program.
- 6.2.2. Collect and maintain all records associated with the Hazard Communication Program and will assist departments and area representatives in implementing the program. These program elements include:
 1. Notification of outside contractors on the hazards in University-owned and occupied buildings.
 2. Contractor oversight of any hazardous substance brought on to University premises.
 3. Maintenance of the central library for SDSs. Training of employees, documentation of and maintenance of training records.
 4. Maintenance of Cal/OSHA 300 Log and documentation of chemical related exposure incidents.

6.3. The Chemical Safety Officer shall:

- 6.3.1. Annually review the Cal State LA Chemical Hygiene Plan and update as necessary.
- 6.3.2. Provide training in the area of chemical / laboratory safety to staff, faculty and students.

6.4. The Radiation Safety Officer shall:

- 6.4.1. Annually review the procedures and protocols for the control, use, storage and disposal of radioactive materials associated with University operations, and update as necessary.
- 6.4.2. Provide training in the area of radiation safety to staff, faculty and students.

6.5. The Biological Safety Officer shall:

- 6.5.1. Annually review the procedures and protocols for the control, use, storage and disposal of biological / medical materials associated with University operations, and update as necessary.
- 6.5.2. Provide training in the area of biological / medical safety to staff, faculty and students.

6.6. The Director of Procurement and Contracts shall:

- 6.6.1. Route all requests for chemical purchases to RM/EHS for review and approval.
- 6.6.2. Ensure that all contracts and purchase orders for chemical substances contain language requiring that two (2) copies of the SDSs be forwarded to the University, with one (1) copy going to the user and the other to RM/EHS. If a supplier fails to meet these SDS obligations, the Director of Procurement and Contracts shall submit a written transmittal to the supplier requesting the applicable SDS information. A copy of this transmittal shall be sent to the RM/EHS Director.

6.7. Department Management shall ensure that employees under their responsibility understand the hazards of the chemical substances they are required to use in their normal duties and assignments. In addition, all new employees shall receive a thorough review of the types of hazardous substances and their safe prior to engaging in related activity. A copy of the SDS for each substance should be maintained in each work area, but at a minimum each employee must be instructed that copies of SDSs are available in RM/EHS during normal business

hours. Off-hour requests are to be directed to Public Safety at extension 3-3700. Employees are also encouraged to access the electronic SDS website at: <http://www.calstatela.edu/ehs>

6.8. Public Safety Dispatch shall contact the RM/EHS Director for off-hour requests of the SDS and / or hazard-related information on a particular product / exposure.

6.9. Faculty shall:

6.9.1. Ensure that personal protective equipment (PPE) required for their class / laboratory activity is appropriate and that students wear the required protection when necessary.

6.9.2. Be responsible for identifying the PPE needs of their course and may contact the RM/EHS for assistance.

6.9.3. Be responsible for ensuring that hazardous materials, if applicable, are used in accordance with proper chemical hygiene protocols established by the University.

6.10. Employees shall:

6.10.1. Review the SDS of all hazardous substances they are required to use in the course of their normal duties and responsibilities.

6.10.2. Be familiar with the hazards and exposure characteristics of hazardous substances that they are required to use. Any chemical-related exposure, spill, or incident of any nature must be immediately reported to Public Safety and / or RM/EHS.

6.11. Hazardous Material Users shall provide RM/EHS a copy of their annual inventory for all hazardous substances under their control. This inventory is by room / area location and a copy shall be maintained in the room or department office. For those areas under the University chemical inventory management program (bar code system) a physical inventory is not necessary.

7.0. SDS INFORMATION:

7.1. GHS is a system for standardizing and harmonizing the classification and labeling of chemicals. It is a logical and comprehensive approach to: defining health, physical and environmental hazards of chemicals; creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and communicating hazard information, as well as protective measures, on labels and SDSs.

7.1.1. SDS Information by Paragraph Heading:

- Sect. 1. Product and Company Identification
- Sect. 2. Hazards Identification
- Sect. 3. Composition / Information on Ingredients
- Sect. 4. First Aid Measures
- Sect. 5. Firefighting Measures
- Sect. 6. Accidental Release Measures
- Sect. 7. Handling and Storage
- Sect. 8. Exposure Control / PPE
- Sect. 9. Physical / Chemical Properties Considerations
- Sect. 10. Stability and Reactivity
- Sect. 11. Toxicological Information
- Sect. 12. Ecological Information
- Sect. 13. Disposal
- Sect. 14. Transport Information
- Sect. 15. Regulatory Information
- Sect. 16. Miscellaneous Information

7.2. The GHS physical hazards for many of the physical hazards are contained in guidance sections with practical information to assist in applying the criteria and list briefly below:

- Explosives
- Flammable Gases
- Flammable Aerosols
- Oxidizing Gases
- Gases under Pressure
- Flammable Liquids
- Flammable Solids
- Self-Reactive Substances
- Pyrophoric Liquids
- Pyrophoric Solids
- Self-Heating Substances
- Substances which, in contact with water emit flammable gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to Metals

7.2.1. Explosives - An explosive substance (or mixture) is a solid or liquid, which is itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

Pyrotechnic substances are included even when they do not evolve gases. A pyrotechnic substance (or mixture) is designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic chemical reactions. Substances, mixtures and articles are assigned to one (1) of six (6) divisions, 1.1 to 1.6, depending on the type of hazard they present. Explosive properties are associated with certain chemical groups that can react to give very rapid increases in temperature or pressure. The GHS provides a screening procedure that is aimed at identifying the presence of such reactive groups and the potential for rapid energy release. If the screening procedure identifies the substance or mixture to be a potential explosive, the acceptance procedure has to be performed.

Table 1 Explosives

Division	Characteristics
1.1	Mass explosion hazard
1.2	Projection hazard
1.3	Fire hazard or minor projection hazard
1.4	No significant hazard
1.5	Very insensitive substances with mass explosion hazard
1.6	Extremely insensitive articles with no mass explosion hazard

7.2.2. Flammable Gases - A gas having a flammable range in air at 20°C and a standard pressure of 101.3 kPa. Substances and mixtures of this hazard class are assigned to one (1) of two (2) hazard categories on the basis of the outcome of the test or calculation method.

7.2.3. Flammable Aerosols - Any gas compressed, liquefied or dissolved under pressure within a non-refillable container made of metal, glass or plastic, with or without a liquid,

paste or powder. The container is fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid or gaseous state.

7.2.4. Oxidizing Gases - Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other materials more than air does. Substances and mixtures of this hazard class are assigned to a single hazard category on the basis that, generally by providing oxygen, they cause or contribute to the combustion of other materials more than air does.

7.2.5. Gases under Pressure - Gases that are contained in a receptacle at a pressure not less than 280 Pa at 20°C or as a refrigerated liquid. This endpoint covers four (4) types of gases or gaseous mixtures to address the effects of sudden release of pressure or freezing which may lead to serious damage to people, property, or the environment, independent of other hazards the gases may pose. For this group of gases, the following information is required: vapor pressure at 50°C, physical state at 20°C at standard ambient pressure and critical temperature. Criteria that use the physical state of compressed gases will be a different classification basis for some workplace systems.

Table 2 Gases under Pressure

Group	Criteria
Compressed gas	Entirely gaseous at -50°C
Liquefied gas	Partially liquid at temperatures > -50°C
Refrigerated liquefied gas	Partially liquid because of its low temperature
Dissolved gas	Dissolved in a liquid phase solvent

7.2.6. Flammable Liquids - A liquid having a flash point of not more than 93°C. Substances and mixtures of this hazard class are assigned to one (1) of four (4) hazard categories on the basis of the flash point and boiling point (See Table 3).

Table 3 Flammable Liquids

Category	Criteria
1	Flash point < 23°C and initial boiling point ≤ 35°C (95°F)
2	Flash point < 23°C and initial boiling point > 35°C (95°F)
3	Flash point ≥ 23°C and ≤ 60°C (140°F)
4	Flash point ≥ 60°C (140°F) and ≤ 93°C (200°F)

7.2.7. Flammable Solids - Solids that are readily combustible, or may cause or contribute to fire through friction. Readily combustible solids are powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly. Substances and mixtures of this hazard class are assigned to one (1) of two (2) hazard categories (See Table 4).

Table 4 Flammable Solids

Category	Criteria
1	Metal Powders: burning time ≤ 5 minutes Others: wetted zone does not stop fire & burning time < 45 seconds or burning > 2.2 mm/second
2	Metal Powders: burning time > 5 and ≤ 10 minutes Others: wetted zone stop fire for at least 4 minutes & burning time < 45 seconds or burning rat > 2.2mm/second

7.2.8. Self-Reactive Substances - Thermally unstable liquids or solids liable to undergo a strongly exothermic thermal decomposition even without participation of oxygen (air). This definition excludes materials classified under the GHS as explosive, organic peroxides or as oxidizing. These materials may have similar properties, but such hazards are addressed in their specific endpoints. There are exceptions to the self-reactive classification for material: (i) with heat of decomposition <300 J/g or (ii) with self-accelerating decomposition temperature (SADT) > 75°C for a 50 kg package.

Substances and mixtures of this hazard class are assigned to one (1) of the seven (7) Types, A to G (See Table 5).

7.2.8.1. Pyrophoric Liquids - A liquid which, even in small quantities, is liable to ignite within five (5) minutes after coming into contact with air. Substances and mixtures of this hazard class are assigned to a single hazard category.

7.2.8.2. Pyrophoric Solids - A solid which, even in small quantities, is liable to ignite within five (5) minutes after coming into contact with air. Substances and mixtures of this hazard class are assigned to a single hazard category.

Table 5 Self-Reactive Substances

Type	Criteria
A	Can detonate or deflagrate rapidly, as packaged.
B	Possess explosive properties and which, as packaged, neither detonates nor deflagrates, but is liable to undergo a thermal explosion in that package.
C	Possess explosive properties when the substance or mixture, as packaged, cannot detonate or deflagrate rapidly or undergo a thermal explosion.
D	<ul style="list-style-type: none"> • Detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or • Does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or • Does not detonate or deflagrate at all and shows a medium effect when heated under confinement.
E	Neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.
F	Neither detonates in the cavitated bubble state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power.
G	Neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C to 75°C for a 50 kg package), and for liquid mixtures, a diluent having a boiling point not less than 150°C is used for desensitization.

7.2.9. Self-Heating Substances - A solid or liquid, other than a pyrophoric substance, which, by reaction with air and without energy supply, is liable to self-heat. This endpoint differs from a pyrophoric substance in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days). Substances and mixtures of this hazard class are assigned to two (2) hazard categories.

7.2.10. Substances which on Contact with Water Emit Flammable Gases – Solids or liquids which, by interaction with water, are liable to become spontaneously flammable or to

give off flammable gases in dangerous quantities. Substances and mixtures of this hazard class are assigned to three (3) hazard categories.

Table 6 Substances which on Contact with Water Emit Flammable Gases

Category	Criteria
1	≥10 L/kg/1 minute
2	≥20 L/kg/ 1 hour + < 10 L/kg/1 min
3	≥1 L/kg/1 hour + < 20 L/kg/1 hour
Not classified	< 1 L/kg/1 hour

7.2.11. Oxidizing Liquids - A liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material. Substances and mixtures of this hazard class are assigned to one (1) of three (3) hazard categories.

7.2.12. Oxidizing Solids - A solid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material. Substances and mixtures of this hazard class are assigned to three (3) hazard categories.

7.2.13. Organic Peroxides - An organic liquid or solid, which contains the dual oxide structure and may be considered a derivative of hydrogen peroxide, where one (1) or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Such substances and mixtures may: be liable to explosive decomposition, burn rapidly, be sensitive to impact or friction and react dangerously with other substances. Substances and mixtures of this hazard class are assigned to one (1) of seven (7) Types, A to G (See Table 7).

Table 7 Organic Peroxides

Type	Criteria
A	Can detonate or deflagrate rapidly, as packaged.
B	Possess explosive properties and which, as packaged, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package.
C	Possess explosive properties when the substance or mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion.
D	<ul style="list-style-type: none"> ▪ Detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or ▪ Does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or ▪ Does not detonate or deflagrate at all and shows a medium effect when heated under confinement.
E	Neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.
F	Neither detonates in the cavitated bubble state nor deflagrates at all and shows only a low or no effect when heated under confinements as well as low or non explosive power.
G	Neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating

	decomposition temperature is 60°C to 75°C for a 50 kg package), and, for liquid mixtures, a diluent having a boiling point not less than 150°C is used for desensitization.
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7.2.14. Substances Corrosive to Metal - A substance or a mixture that by chemical action will materially damage, or even destroy, metals is termed "corrosive to metal." These substances or mixtures are classified in a single hazard category. The GHS criteria are a corrosion rate on steel or aluminum surfaces exceeding 6.25 mm per year at a test temperature of 55°C. The concern in this case is the protection of metal equipment or installations in case of leakage (e.g., plane, ship, tank), not material compatibility between the container / tank and the product. This hazard is not currently covered in all systems.

8.0 NON-ROUTINE TASKS:

8.1. Non-routine tasks are defined as working on, near, or with unlabeled piping, unlabeled containers of an unknown substance, confined space entry where a hazardous substance may be present and / or a one-time task using a hazardous substance differently than intended (example: using a solvent to remove stains from tile floors).

Steps for Non-Routine Tasks:

Step 1: Hazard Determination

Step 2: Determine Precautions

Step 3: Specific Training and Documentation

Step 4: Perform Task

8.2. Both the department supervisor and RM/EHS shall evaluate all non-routine tasks, before the task should commence, to determine all hazards present. This determination will be conducted with quantitative / qualitative analysis (air sampling, substance identification / analysis, etc.).

8.3. Once the hazard determination is made, the department supervisor and RM/EHS shall determine the necessary precautions needed to remove the hazard, change to a non-hazardous chemical, or protect the employee from the hazard through the use of PPE to safeguard the employees present. In addition, the department supervisor or RM/EHS shall provide specific safety training for employees affected.

9.0 OFF-SITE USE OR TRANSPORTATION OF CHEMICALS:

9.1. An SDS shall be provided to employees for each chemical and each occurrence of use or transport away from University facilities.

9.2. All State and Federal Department of Transportation (DOT) Regulations will be followed including use of certified containers, labeling and marking, securing of containers and employee training.

10.0 GENERAL CHEMICAL SAFETY:

10.1. Assume all chemicals are hazardous. The number of hazardous chemicals and the number of reactions between them are so large that prior knowledge of all potential hazards cannot be assumed. Use chemicals in as small a quantity as possible to minimize exposure and reduce possible harmful effects.

10.2. The following general safety rules shall be observed when working with chemicals:

- Read and understand the SDSs
- Keep the work area clean and orderly
- Use the necessary safety equipment
- Carefully label every container with the identity of its contents and appropriate hazard warnings
- Store incompatible chemicals in separate areas
- Substitute less toxic materials when possible
- Limit the volume of volatile or flammable material to the minimum needed for the immediate task at hand
- Provide means of containing the material if equipment or containers should break or spill their contents, which should be accomplished by providing a secondary containment prior to use

11.0. TASK EVALUATION:

- 11.1. Each task that requires the use of chemicals should be evaluated to determine the potential hazards associated with the work. This hazard evaluation must include the chemical or combination of chemicals that will be used in the work, as well as other materials that will be used near the work area.
- 11.2. If a malfunction during the operation has the potential to cause serious injury or property damage, a Safe Operational Procedure (SOP) should be prepared and followed. Operations must be planned to minimize the generation of hazardous waste.

12.0. CHEMICAL STORAGE:

- 12.1. The separation of chemicals (solids or liquids) during storage is necessary to reduce the possibility of unwanted chemical reactions caused by accidental mixing.
- 12.2. Explosives should be stored separately outdoors. Lips, strips or bars are to be installed across the width of storage shelves to restrain the chemicals in case of earthquake.
- 12.3. Storage of liquid containers on shelves requires that a tray or other means of secondary containment be provided to preclude the potential for mixing of incompatibles.
- 12.4. In general, use either distance or barriers (e.g., trays) to isolate chemicals into the following groups:
- Flammable Liquids
 - Acids
 - Bases
 - Reactives (water / air)
 - Other Liquids
- 12.5. Chemicals shall never be stored in the same refrigerator used for food storage. Refrigerators used for the storage of chemicals must be appropriately identified by a label on the door reflecting "FOR CHEMICAL USE ONLY." Only refrigerators rated for flammable materials are approved for the storage of flammable substances. Food must never be consumed or stored in a room where chemicals are stored and / or used.

13.0. CONTAINER LABELS:

- 13.1. It is extremely important that all containers of chemicals are properly labeled. This includes every type of container, from a 5000-gallon storage tank to a spray bottle of degreaser. The following requirements apply:

- All containers will have the appropriate label, tag or marking prominently displayed that indicates the identity, safety and health hazards
- Portable containers, which contain a small amount of chemical, need not be labeled if they are used immediately that shift, but must be under the strict control of the employee using the product
- All warning labels, tags, etc. must be maintained in a legible condition and not be defaced
- Incoming chemicals are to be checked for proper labeling by the receiving department and / or user

13.2. Labeling Requirements

13.2.1. Suppliers are obligated to label containers with a listing of hazardous substances and the appropriate hazard warnings. If a department uses a secondary container, a new label must be generated. This label should contain the same information as the supplier's label.

13.2.2. The label shall contain a listing of hazards. The listing shall include the following health hazards and physical hazards:

<u>Reactivity</u>	<u>Health Hazards</u>	<u>Fire Hazard – Flash Points</u>
0. Stable	1. Normal Material	1. Will Not Burn
1. Unstable if heated	2. Hazardous	2. Above 200 degrees F
2. Violent chemical change	3. Extreme Danger	3. Below 100 degrees F
3. Shock or heat may cause detonation	4. Deadly	4. Below 73 degrees F
4. May Detonate		
Specific Hazards:	OXY – Oxidizer	ACID - Acid
	ALK – Alkali	CORR – Corrosive
	W – Use No Water	

13.3. All containers, tanks and process equipment containing hazardous substances must be labeled. Each label will have a hazardous substance listing, hazard warnings, and name and address of supplier.

13.4. The work area representative(s) shall assure that all:

13.4.1. Hazardous materials containers are properly labeled.

13.4.2. Secondary (non-supplier) containers are labeled with either an extra copy of the manufacturer label or a filled out generic label.

14.0. EMERGENCIES AND SPILLS:

14.1. In case of an emergency, implement the University Emergency Action Plan:

1. Evacuate people from the area
2. Isolate the area
3. If the material is flammable, turn off ignition and heat sources
4. Only personnel specifically trained in emergency response are permitted to participate in chemical emergency procedures beyond those required to evacuate the area; RM/EHS shall coordinate the response activities from this point forward.
5. Call 911 to have Public Safety personnel dispatched to initiate control and coordination.

15.0. HOUSEKEEPING:

15.1. Good housekeeping practices and principles are essential to this program's success. The following is a list of the minimum requirements for good housekeeping practices.

1. Maintain the smallest possible inventory of chemicals to meet immediate needs.
2. Periodically review stock of chemicals on hand.
3. Ensure that storage area or equipment containing large quantities of chemicals is secure from accidental spills and that secondary containment exists for liquids.
4. Rinse emptied bottles that contain acids or flammable solvents before disposal. If an appreciable amount of material is present in the container properly dispose of this material before discarding.
5. Recycle / reuse unused laboratory chemicals wherever possible.
6. DO NOT place hazardous chemicals in salvage or garbage receptacles.
7. DO NOT pour chemicals onto the ground / floor.
8. DO NOT dispose of chemicals through the storm drain system or sanitary sewer system (any sink on campus).

16.0. EMPLOYEE TRAINING:

16.1. Initial Orientation Training

16.1.1. All new employees shall receive safety orientation training covering the elements of the Hazard Communication and Employee Right-to-Know Program. This training will consist of general information covering:

1. Location and availability of the written Hazard Communication Program.
2. Location and availability of the written List of Chemicals used in the workplace.
3. Methods and observation used to detect the presence or release of a hazardous chemical in the workplace.
4. The specific physical and health hazard of all chemicals in the workplace.
5. Specific control measures for protection from physical or health hazards, including specific procedures that have been implemented to protect the employee from exposure to hazardous substances.
6. Explanation of the chemical labeling system.
7. Location and use of SDSs.

16.2. Job Specific Training

Employees will receive on-the-job training from their supervisor. This training will cover the proper use, inspection and storage of necessary PPE and chemical safety training for the specific chemical they will be using or will be working around. This includes: whenever a new or revised SDS is received and the new information indicates a significant increased risk, or increases measures necessary to protect the employee's health, as compared to those stated on the SDS previously provided.

16.3. Annual Refresher Training

Annual hazard communication refresher training will be conducted as part of the University's safety training program.

16.4. Immediate On-the-Spot Training

This training will be conducted by supervisors for any employee who requests additional information or exhibits a lack of understanding of the safety requirements.

16.5. Training Requirements

16.5.1. An employee shall attend health and safety training conducted by the area supervisor prior to working with any hazardous substance. The training shall include the following information:

1. An overview of the requirements contained in the hazard communication regulation, including their rights under the regulation.
2. Operational procedures for their work area where hazardous substances are present.
3. Location and availability of the written hazard communication plan.
4. Location of applicable SDS information.
5. Methods and observations used to determine the presence or release of hazardous substances in their work area.
6. Steps to take in order to lessen or prevent exposure to hazardous substances (examples are the use of engineering controls, work practices, and the use of personal protective equipment).
7. Steps the University or department has taken to lessen or prevent exposure to these substances, if any.
8. Emergency and first aid procedures to follow if employees are exposed to hazardous substances.
9. How to read labels and review a SDS to obtain appropriate hazard information.
10. Clean up procedures and approved techniques for the disposal of any hazardous waste.

16.5.2. Training sessions will be documented, which will include the training course outline, names of attendees, name of the trainer, and the date of the training. A copy of this documentation will be forwarded to RM/EH&S and maintained in the originating department's files.

17.0. HAZARDOUS MATERIALS INVENTORY:

- 17.1. An inventory will be taken of all hazardous materials, by room and updated as appropriate (when changes in inventory quantity occur).
- 17.2. The individual(s) responsible for the area where the hazardous materials are located are herein known as the individual user. The individual user contacts RM/EHS when there are changes to inventory (new items or items to be disposed) at which point RM/EHS will make the necessary changes to the chemical inventory database (creating and attaching new barcoded labels to new items and removing entries for disposed items).
- 17.3. The University Business Plan is a regulatory document required by the City of Los Angeles Fire Department detailing the location of and response procedures for hazardous materials on campus.
- 17.4. The University will NOT accept hazardous material donations.

18.0. APPENDICES:

Appendix A: Training Outline & Handout

Appendix B: Preparatory Outline

Hazard Communication Training Outline and Handout

TRAINING OUTLINE

The following Health Hazard Information is mandatory.

Although safety hazards related to the physical characteristics of a substance can be objectively defined in terms of testing requirements (e.g. flammability) health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body – such as decreased pulmonary functions. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees – such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the changes in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most substances have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms “acute” and “chronic” are used to delineate between effects on the basis of severity or duration. “Acute” effects usually occur rapidly as a result of short-term exposures, and are of short duration. “Chronic” effects generally occur as a result of long-term exposure, and are of long duration.

Health Hazard Criteria

1. Carcinogen:

A substance is considered to be if:

- a. It has been evaluated by the International Agency for Research on Cancer (IARC) Monographs, Vols. 1-53 and Supplements 1-8, and found to be a carcinogen or potential carcinogen.
- b. It is listed as a carcinogen or potential carcinogen in the Sixth Annual Report on Carcinogens published by the National toxicology Program (NTP).
- c. OSHA regulates it as a carcinogen.
- d. It has been documented on the California Proposition 65 list of carcinogens.

2. Corrosive:

A substance that causes visible destruction of or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a substance is considered if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to Title 49, CFR, Part 173, it destroys or changes irreversibly the structure of the tissues in four (4) hours. This shall not refer to action on inanimate surfaces.

3. Highly toxic:

A substance falling within any of the following categories:

- a. A substance that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- b. A substance that has a median lethal dose (LD50) 200 milligrams or less per kilogram of body weight when administered by continuous contact for twenty-four (24) hours, or less if death occurs within twenty-four (24) hours, with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
- c. A substance that contains a median lethal concentration of (LD50) in air of 200 parts per million by volume, or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one (1) hour, or less if death occurs within one (1) hour, to albino rats weighing between 200 and 300 grams each.

4. Irritant:

A substance, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A substance is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of Title 16, CFR, Part 1500.41, for twenty-four (24) hour exposure or by other appropriate techniques, it results in an empirical score of five (5) or more. A substance is an eye irritant if so determined under the procedure listed in Title 16, CFR, Part 1500.42 or other appropriate techniques.

5. Sensitizer:

A substance that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the substance.

6. Toxic:

A substance falling within any of the following categories:

- a. A substance that has a median lethal dose (LD50) of more than 50 milligrams per kilograms but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- b. A substance that has a median lethal dose (LD50) of more than 200 milligram per kilogram per million but not more than 2,000 parts per kilogram of body weight when administered by

continuous contact for twenty-four (24) hours, or less if death occurs within twenty-four (24) hours, with bare skin of albino rabbits weighing 2 and 3 kilograms each.

- c. A substance that has a median lethal concentration (LD50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one (1) hour, or less if death occurs within one (1) hour, to albino rats weighing between 200 and 300 grams each.

7. Target organ effects:

The following is an organ categorization of effects, which may occur, including examples of signs and symptoms and substances, which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

- a. Hepatoroxins: Substances, which produce liver damage. Signs and symptoms are jaundice and liver enlargement. Substances are carbon tetrachloride and nitrosamines.
- b. Nephrotoxins: Substances, which produce kidney damage. Signs and Symptoms are edema, and proteinuria. Substances are halogenated hydrocarbons and uranium.
- c. Neurotoxins: Substances, which produce their primary toxic effects on the nervous system. Signs and Symptoms are narcosis, behavioral changes, and decrease in motor functions. Substances are mercury and carbon disulfide.
- d. Agents, which act on the blood or hematopoietic system, decrease hemoglobin function, and deprive the body tissues of oxygen. Signs and Symptoms are cyanosis and loss of consciousness. Substances are carbon monoxide and cyanides.
- e. Agents, which damage the lung and irritate or damage the pulmonary tissue. Signs and Symptoms are cough, tightness in chest, and shortness of breath. Substances are silica and asbestos.
- f. Reproductive toxins: Substances, which affect the reproductive capabilities, including chromosomal damage (mutations) and effects on fetuses (teratogenesis). Signs and Symptoms are birth defects and sterility. Substances are lead and benzene.
- g. Cutaneous hazards: Substances, which affect the dermal layer of the body. Signs and Symptoms are defatting of the skin, rashes and irritation. Substances are ketones and chlorinated compounds.
- h. Eye hazards: Substances, which affect the eye or visual capacity. Signs and Symptoms are conjunctivitis and corneal damage. Substances are organic solvents and acids.

Handout

General Chemical Safety

Use these safety procedures when working with chemicals:

- Keep the work area clean and orderly.
- Use the necessary safety equipment.
- Carefully label every container with the identity of its contents and appropriate hazard warnings.
- Store incompatible chemicals in separate areas.
- Substitute with less toxic materials whenever possible.
- Limit the volume of volatile or flammable material to a minimum.
- Provide means of containing the material if containers should break and / or spill their contents.
- Obtain and read the Safety Data Sheets (SDS).

The separation of chemicals (solids or liquids) during storage is necessary to reduce the possibility of unwanted chemical reactions caused by accidental mixing. Explosives should be stored separately outdoors. Use either distance or barriers (e.g., trays) to isolate chemicals into the following groups:

- Flammable liquids (place in approved fire lockers)
- Acids
- Bases
- Other liquids

Container Labeling

It is extremely important that all containers of chemicals are properly labeled. This includes every type of container from a 5000-gallon storage tank to a spray bottle of degreaser. The following requirements apply:

- All containers must have a label, tag or marking that indicates any safety or health hazards.
- Portable containers need not be labeled if they are used immediately that shift, but must be under the strict control of the employee using the product.
- All warning labels, tags, etc., must be maintained in a legible condition and not be defaced.
- Incoming chemicals are to be checked for proper labeling by the user.

Emergencies

In case of an emergency, implement the Emergency Action Plan.

- Evacuate people from the area.
- Isolate the area.
- If the material is flammable, turn off ignition and heat sources.
- Call 911 for campus Public Safety assistance, if required.

Non-Routine Tasks

Non-routine tasks are defined as working on, near, or with unlabeled piping, unlabeled containers of any substance, confined space entry where a hazardous substance may be present and / or a one-time task using a hazardous substance differently than intended. A full hazard evaluation must be conducted before continuing with non-routine tasks involving chemicals.

Safety Data Sheets (SDS)

SDSs are provided by the chemical manufacturer to provide additional information concerning safe use of the product. Each SDS provides:

- Common name and chemical name of the material or product.
- Name, address and phone number of the manufacturer.
- Emergency phone numbers for immediate hazard information.
- Date the SDS was last updated.
- Listing of hazardous ingredients.
- Chemical hazards of the material.
- Information for identification of chemical and physical properties.

SDS: Chemical User Information

Fire and / or Explosion Information

- Material flash point, auto-ignition temperature and upper / lower flammable limits.
- Proper fire extinguisher agents to be used.
- Fire fighting techniques.
- Any unusual fire or explosive hazards.

Chemical Reactions Information

- Stability of chemical.
- Conditions and other materials, which can cause reactions with the chemical.
- Dangerous substances that can be produced when the chemical reacts.

Control Measures

- Engineering controls required for safe use of the product.
- Personal protective equipment (PPE) required for use of the product.
- Safe storage requirements and guidelines.
- Safe handling procedures.

Chemical Health Hazards

- Permissible Exposure Limits (PEL) and Threshold Limits Value (TLV).
- Acute or chronic symptoms of exposure.
- Main routes of entry into the body.

- Medical conditions that can be made worse by exposure.
- Cancer causing properties, if any.
- Emergency and first aid treatments.

Spill and Leak Procedures

- Cleanup protocols.
- PPE to be used during cleanup.
- Disposal of waste and cleanup material.

Preparatory Outline

HAZARD COMMUNICATION SAFETY TRAINING OUTLINE

Preparation

- Read applicable Hazard Communication Plan
- Check Safety Office for videos
- Check Safety Office for other resources
- Read instructor training information
- Resolve questions you have before training session
- Notify employees two (2) days in advance of time / location of training

Training Materials

- Training handouts
- Hazard Communication Training Handout
- Safety Data Sheets (SDS) (as examples)

Support

Contact RM/EHS at extension 3-3549 or 3-3527 to receive any additional materials or other information, which would enhance the training experience.

Documentation

Ensure that all attendees are signed in and those records are retained within the department office, and a copy is submitted to RM/EHS.