HAZARD COMMUNICATION (HAZCOM)

Environmental Health and Safety

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1. Purpose

Soka University of America (SUA or the University) is committed to providing a safe and healthy environment to all members of the campus community. University's Hazard Communication Program (HAZCOM or the Program) is intended to ensure that employees, faculty, and staff are made aware of and properly trained in the safe use of hazardous chemicals with which they may come in contact. This will be accomplished by providing appropriate training, compiling chemical inventories, maintaining and using Safety Data Sheets (SDSs), and ensuring that chemical containers are properly labeled.

2. Regulations

- Title 8, California Code of Regulations (CCR), Section 5194 (California HAZCOM)
  - Title 8, CCR, Subsection of 5194(b)(6) – the Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
  - Guide to California Hazard Communication Regulation
- Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (29 CFR) 1910.1200
- Title 8, CCR, Section 5155 (Airborne Contaminants)

3. Scope and Application

This program applies to all work operations at SUA where employees may be exposed to hazardous chemicals under normal working conditions or during an emergency situation. Typically, hazardous chemicals covered by HAZCOM are solvents, paints, oils, adhesives, laboratory chemicals, sanitary agents, floor strippers, compressed gases, to name a few.

HAZCOM does ***not*** apply to:

- Laboratories under the direct supervision and regular observation of an individual who has knowledge of the physical hazards, health hazards, and emergency procedures associated with the use of the particular hazardous chemicals (PHSs) involved;
- Hazardous waste regulated by the EPA;
- Tobacco or tobacco products;
- Wood or wood products with the exception of wood dust which is not exempt;
- Consumer products (ex. Pens, pencils, white-out, adhesive tape, etc.) used in the workplace;
- Pesticide use regulated by the California Department of Food and Agriculture;
- Food, drugs, and cosmetics for personal use;
- Chemicals and processes that do not result in employee exposure via inhalation, ingestion, or skin; and
- Operations in which employees handle hazardous chemicals only in sealed containers (e.g. warehouse, transportation, or retail sales). However, operators handling hazardous chemicals in sealed containers shall:

- Ensure that hazardous chemicals are clearly labeled; and are not removed or defaced;
- Maintain SDSs of all hazardous chemicals and make them accessible to everyone at all times; and
- Train all employees in handling hazardous chemicals so that they can protect themselves and others in the event of spill or leak.

Proposition 65

Many chemicals in the workplace can lead to life-threatening effects, and therefore Proposition 65 warnings may apply to the chemicals known to the State of California to cause cancer, birth defects, or other harmful effects to the reproductive system.

Proposition 65 listed chemicals are published in a list at least once a year by California Environmental Protection Agency's (Cal/EPA) Office of Environmental Health Hazard Assessment. An updated list of these chemicals is available by calling OEHHA at (916)-445-6900 or on http://oehha.ca.gov/prop65/prop65_list/newlist.html

Proposition 65 does *not* apply to:

- An exposure for which where federal law supersedes state law;
- An exposure that takes place less than 12 months from the time the chemical was officially declared in T22 CCR, Section 12000, "Chemicals Known to the State of California to Cause Cancer or Reproductive Toxicity"; and
- An exposure for which:
  - A given chemical from the list of carcinogens poses no significant cancer risk, assuming lifetime exposure at the level in question; and
  - The exposure of a given chemical from the list of reproductive toxicants will have no observable effect, assuming exposure at 1000 times the level in question.

4. Accessibility of HAZCOM

A copy of this program is available in the office of Director of Environmental Health and Safety (EHS).

5. Responsibilities

Environmental Health and Safety (EHS) is responsible for:

(A) Developing and maintaining University's HAZCOM;
(B) Assisting supervisors in complying with Program requirements including labeling, Safety Data Sheets (SDSs), employee information and training, and recordkeeping;
(C) Providing technical support and access to references to all employees in order to protect from hazardous chemicals; and
(D) Assisting in selecting appropriate personal protective equipment (PPE) and other exposure control methods to minimize exposures to hazardous chemicals.

Supervisors are responsible for:

(A) Implementing University's HAZCOM Program in their work areas;
(B) Developing and maintaining an inventory as well as SDSs of all hazardous chemicals that are present in their workplaces and subsequently making them to accessible everyone;
(C) Training all employees under their supervision in site-specific use of hazardous chemicals and methods required to protect from related hazards;
(D) Making sure that all employees under their supervision have completed HAZCOM training and other applicable training requirements;
(E) Ensuring that all requirements of the Program have been met before employees and contractors and their employees are exposed to hazardous chemicals under normal conditions of use or in a foreseeable emergency;
(F) Informing emergency procedures and safe work practices to all employees under their supervision; and
(G) Notifying EHS when bringing items into the workplace that are hazardous to personnel outside of the workplace.

Employees are responsible for:

(A) Completing applicable training prior to handling hazardous chemicals especially HAZCOM training;
(B) Knowing how to access SDSs;
(C) Reading, understanding, and following safety information included on container labels and SDSs;
(D) Familiarizing with workplace hazards, safe practices, and emergency procedures for all hazardous chemicals used in their work area;
(E) Notifying their supervisors with regards to non-compliant labeling (e.g. defaced, fading, or inadequate labeling), missing SDSs, or outdated chemical inventory;
(F) Planning and performing operations in accordance with established protocols and good safety practices;
(G) Using appropriate exposure control methods (e.g. personal protective equipment) and knowing their limitations;
(H) Reporting any incidents involving hazardous chemicals to appropriate entities of the University (e.g. supervisors, EHS, or Public Safety); and
(I) Seeking assistance of supervisors and/or EHS as needed.

Contractors are responsible for

(A) Providing information and training relevant to OSHA's Hazard Communication Standard (HCS) to their employees;
(B) Notifying University's contracting official and EHS if they plan to use a hazardous chemical or perform an operation that can result in an exposure to campus community; and
(C) Making inventories and SDSs of chemicals accessible to campus community.

6. Hazard Determination (T8 CCR 5194[d])

SUA will assess the hazards associated with the chemicals as well as equipment and provide information to all personnel by means of SDSs, labels, and other forms of warning. Items in following references are considered hazardous.

(A) *The Hazardous chemicals List* (T8 CCR, Section 339), commonly known as "The Director's List of Hazardous chemicals"
(B) 29 CFR Part 1910, Subpart Z, "Toxic and Hazardous chemicals," Occupational Safety and Health Administration (Federal OSHA); T8 CCR, Section 5155, "Air Contaminants"
(C) *Threshold Limit Values for Chemical Substances in the Work Environment,* American Conference of Governmental Industrial Hygienists (ACGIH), 1991-1992
(D) *Sixth Annual Report on Carcinogens*, National Toxicology Program (NTP), 1991
(E) *Monographs*, International Agency for Research on Cancer (IARC), Vols. 1–53 and Supplements 1–8. World Health Organization (WHO)
(F) *Safety Data Sheets* (SDSs) as reproductive toxicants or cancer-producing substances
(G) T22 CCR, Section 12000, under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), "Chemicals Known to the State of California to Cause Cancer and or Reproductive Toxicity," a list published at least once a year by Cal/EPA's Office of Environmental Health Hazard Assessment.

Furthermore, any other substance that presents as a hazard as determined by scientific evidence should also be considered hazardous.

7. Hazardous Chemicals Inventory

Each area/department is responsible for developing and maintaining an up-to-date inventory of hazardous chemicals in their workplace. Area/Department supervisors or their designee(s) are responsible for updating and maintaining the inventory as hazardous chemicals are added or removed from the department. A departmental or area-specific inventory should be made available upon request. EHS can be consulted for assistance with product hazard reviews.

The names of the hazardous chemicals on manufacturer's label must match with the names present in the SDSs so that the hazardous chemicals inventory can serve as an index to the SDSs. See Appendix A for a chemical inventory template.

Introduction of New Hazardous Chemicals

When a new chemical is added to the inventory list, the supervisors are responsible for reviewing the SDS, particularly for potential health hazards. If the product presents a new health hazard that causes health issues unlike those covered in the training session, the supervisors shall immediately notify all affected personnel about the new health hazards and provide an updated SDS within 30 days. Every affected employee must read the updated information as well as an SDS and sign and date the form thereafter (Appendix B).

8. Safety Data Sheets (SDSs)

Safety data sheets (SDSs) describe the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first aid procedures, and control measures related to hazardous chemicals. At SUA, SDSs can be accessed either by googling or by visiting SUA Portal (SUA Portal → Areas → Operations → Environmental Health and Safety → Material Safety Data Sheets (MSDSs) → MSDSonline Search). For more assistance with SDS search, contact EHS.

OSHA's Hazard Communication Standard (HCS) requires that all employees have an access to safety data sheets (SDSs). Where a computer with Internet access is not available, supervisors are advised to develop and maintain hard copies of SDSs of every hazardous chemical that is present in their workplaces. University employees and students may contact EHS with any questions related to information provided in the SDS.

Requesting SDSs from the Manufacturers/Importers

Generally, manufacturers/suppliers provide SDSs with initial and/or each shipment or through their websites. Upon arrival of an SDS, supervisors or their designee should ensure that the incoming SDS is complete and is compliant. See Appendix C for the checklist of required SDS information. Once a complete SDS is received, make it available to everyone thereafter. If an incoming SDS is incomplete, supervisors are advised to notify EHS. Alternatively, supervisors can submit a written request to the manufacturer/supplier to provide a complete SDS (See Appendix D).

See Appendix H to learn the details of new SDSs.

Questions or Additional Information

If you need additional information or have a specific question on SDS, please call Cal/OSHA Consultation Service at 1-800-963-9424 or HESIS of the Occupational Health Branch at 510-622-4317(English).

9. Labeling and Other Forms of Warning

Hazardous chemical containers must be clearly labeled, tagged, or marked in accordance with the Hazard Communication Standard. Each container of hazardous chemical must have EITHER a manufacturer's label, which contains the following information:

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s) and
- Supplier information

OR

A supplemental label that provides general hazard information including: Product identifier and words, pictures, symbols, or a combination thereof, which provide at least

general information regarding the hazards of the chemicals. And, that in conjunction with the other information available under this program must provide employees with the specific information regarding the physical and health hazards of the hazardous chemical. Supplemental labels can also be listed in the same format as original label. Abbreviations or codes should not be used on containers unless there is insufficient space on the container. When used, however, codes and abbreviations must be readily accessible to hazardous chemical users.

Further labeling requirements apply for specific chemicals listed under the chemical-specific health standards as referenced in Title 8, CCR, Article 110 (Regulated Carcinogens).

Alternative signs, placards, or operating procedures may be used in lieu of affixing labels to individual stationary process containers as long as minimum requirements of a label on containers are conveyed to the employees and are in accordance with the Hazard Communication Standard. The written materials must be readily accessible to the employees in their work area throughout each work shift.

Employees must not remove or intentionally deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information. Labels or other forms of warning must be legible, in English and prominently displayed on the container, or readily available in the work area throughout each work shift. Employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

Employees, however, are not required to label portable containers into which hazardous chemicals are transferred from labeled containers and which are intended ONLY for the immediate use of the employee who performs the transfer. Secondary containers intended for use after the immediate shift must be labeled with:

- Product identity (Chemical/Product Name)
- Proposed chemical structure or Molecular formula, if possible
- Concentration or purity (ex. Molarity, percent, etc.), if possible
- Date when prepared/transferred
- Name/Initials of the user/owner
- Hazard warnings, if any (ex. Flammable, Corrosive, Prop 65 warnings)
- Size of container or original quantity of the chemical (optional)

Newly synthesized compounds must be labeled with the appropriate hazard warnings based on the knowledge of the chemical and physical properties of that substance. Labeling of materials manufactured and transported from SUA must conform to US Department of Transportation (DOT) Hazardous Materials Regulations.

NOTE: If a chemical is produced in the laboratory for another user outside of the laboratory, then the requirements of the OSHA Hazard Communication Standard [29 CFR 1910.1200] must be met including the requirements for preparation of SDSs and labeling.

Proposition 65

The Right-To-Know mandates that a clear, reasonable warning be given to employees, students, and others prior to exposure to any chemicals, carcinogens, teratogens, or mutagens. The language in warning must clearly state that the chemical in question is

known to cause cancer, birth defects, or other reproductive harm. Under Proposition 65, warnings are required for: (1) Consumer product exposures; (2) Occupational exposures; and (3) Environmental exposures.

Warnings can be communicated by one or combination of following methods:

(A) Warning on product label;
(B) Warning or sign posted conspicuously in the workplace; and/or
(C) A warning that complies with Federal OSHA "Hazard Communication Regulation" (29 CFR, Section 1910.1200), the California "Hazard Communication Regulation" (T8 CCR, Section 5194), and the "Pesticides and Worker Safety Requirements" (T3 CCR, Ch. 3, Subchapter. 3, Section 6700).

10. Employee Information and Training

Any person who may come into contact with hazardous chemicals must be trained within 30 days of the initial assignment, whenever a new hazard is introduced into the workplace, and when exposed to other workplace hazards that were not previously addressed. Employees need to know ahead of time the identity and hazards of all chemicals to which they may be exposed, including chemicals listed in Proposition 65.

Upon completion of the training, employees must sign a form documenting that they have received the training (Appendix F). Employees, students, and others who may come into contact with hazardous chemicals must be informed of:

(A) The requirements of the Program;
(B) Any operations in their work area where hazardous chemicals are present;
(C) Location and availability of the SDSs and the Program;
(D) Methods to detect the presence or release of hazardous chemicals in their work area (such as exposure monitoring devices, visual appearance or odor of the chemicals, etc.);
(E) The physical and health hazards of chemicals in work area including simple asphyxiant, combustible dust, pyrophoric gases, and hazards not otherwise classified;
(F) The details of University's HAZCOM Program, including explanation of labeling system and SDSs, and how employees can obtain and use appropriate hazard information; and
(G) Control measures to minimize exposures to hazardous controls and emergency procedures.

11. Contractors

The University uses contractors for facilities maintenance, landscape services, and dinning services. When it comes to contractors, they must train their employees in Cal-OSHA's HAZCOM and non-routine hazardous tasks. At minimum, contractors and their employees must know what hazards are involved and how to control exposures. Additionally, contractors must follow University's HAZCOM Program and notify the University of any chemicals that will be used on the property owned or used by SUA. Furthermore, contractors' chemical inventory, training records, SDSs, and their written program should also be available upon request.

12. Non-Routine Tasks

For non-routine hazardous tasks, supervisors must train employees, students, and contractors on the following:

(A) Specific hazards and
(B) Protective/safety measures and protocols used to minimize the danger such as: providing ventilation, PPE, buddy systems, respirators, emergency procedures, to name a few.

13. Emergency Procedures

Numerous hazardous materials (HAZMATs) are used on daily basis in laboratories, facilities maintenance, art studios, and other areas of the University. While these HAZMATs are handled carefully and responsibly, accidents involving spills may still happen. Therefore, it is very important to know what to do in the event of a HAZMAT spill. The clean-up of HAZMATs should only be done by those who are well trained and adequately equipped, and are familiar with the hazards and necessary safety precautions. Do **NOT** clean up spills if:

- You are not trained to do so;
- You lack adequate equipment or materials to clean-up spills;
- It is unsafe or dangerous to do so;
- Released/spilled material is unknown;
- A spill results in fire or explosion, or presents a risk of fire/explosion;
- You experience symptoms of exposures;
- A spill size is large (greater than 1 liter); or
- A spill is recognized as “unsafe” or “dangerous” by supervisors or others.

Whenever a HAZMAT spill occurs or is discovered, report it to supervisors and/or Public Safety. When reporting a spill, always provide:

- The exact location of the incident
- Your name and contact information where you can be reached later, preferably cell phone
- Spill volume
- When the spill occurred or was discovered (time and date)
- Name(s) of hazardous materials and their hazards, if known[1]
- Injuries/exposures, if known
- Safe directions for First Responders to approach the spill area
- Other factors to be considered (e.g. assistance for disabled persons)

Police, Fire Department, and Ambulance	**9-1-1**
Department of Public Safety (Public Safety)	Phone: 949-480-4100 (Available 24/7/365)
Department of Environmental Health & Safety (EHS)	Phone: 949-480-4979 (Mon – Fri: 9 AM – 5 PM)

[1] Avoid intentionally approaching a spill if the contents of HAZMAT spills are unknown.

Be aware that non-SUA persons (i.e. police, ambulance drivers, and firefighters) may not be familiar with our campus; therefore, please be as descriptive as possible when reporting to non-SUA persons.

14. Recordkeeping

HAZCOM training records of every employee must be kept for at least the duration of employment plus 3 years. Employee exposure, exposure monitoring and medical records must be maintained for the duration of employment plus thirty years. Inspection and hazard correction records must be kept for 3 years.

15. Program Evaluation

EHS is responsible for evaluating the Program annually and/or on as needed basis (Appendix G).

16. List of Appendices

Appendix A: Chemical Inventory Template

Chemical Name	Amount/ Quantity	Hazard Class (ex. Corrosive, Oxidizer)	Chemical Abstracts Service (CAS#)	Supplier	Location (ex. Shelf, Cabinet)	Date Received (mm/dd/yyyy)	SDS Present? (Y/N)

Appendix B: Employee's New Chemical Signature Form

Name of New Chemical: _____

Vendor's Name: _____

Location: _____

Date the Chemical Arrived: _____

Date of Posting (SDS) Form: _____

This chemical may have health effects not covered during your initial Hazard Communication Training Session. Each affected employee is asked to read the attached Safety Data Sheet (SDS) to understand the new health effects for the following chemical:

Upon reading the Safety Data Sheet (SDS), each employee must sign and date this form.

1. _____	**6.** _____
2. _____	**7.** _____
3. _____	**8.** _____
4. _____	**9.** _____
5. _____	**10.** _____

Appendix C: Checklist of Required Safety Data Sheet (SDS) Information

The Hazard Communication Standard 1910.1200 requires that 16 items of information be included in the Safety Data Sheets (SDS) provided to buyers. There is no specified order for these items; they may be found anywhere on the SDS. If the preparer of the SDS has found no relevant information for a given item, the SDS must be marked to indicate that no applicable information was found. This checklist should be used to determine the completeness of the SDS. It does not assess the accuracy of the information. Check Box If Item Is Complete

1. Product Identification

2. Hazard(s) Identification

3. Composition/Information on Ingredients

4. First-Aid Measures

5. Fire-fighting Measures

6. Accidental Release Measures

7. Handling and Storage

8. Exposures Controls/Personal Protection Equipment (PPE)

9. Physical and Chemical Properties

10. Stability and Reactivity

11. Toxicological Information

12. Ecological Information

13. Disposable Considerations

14. Transport Information

15. Regulatory Information (especially Proposition 65 Warnings)

16. Other Information

PRODUCT: _____ **MANUFACTURER: _____**

DATE OF SDS: _____ **CHECKED BY: _____**

Appendix D: Letter to Request a Complete SDS

TO:

FROM:

DATE:

RE: Safety Data Sheets (SDS)

In reviewing the Safety Data Sheet(s) for your product(s), the following required information (according to the OSHA Hazard Communication Standard 1910.1200) was not on the SDS:

Product Name	Reason SDS Is Not Complete

Please supply us with this information. Your prompt attention to this is necessary for us to fully implement our Hazard Communication Program. Please send this information as soon as possible.

Thank you for your cooperation.

Sincerely,

Appendix E: Letter to Request a Complete Label

TO:

FROM:

DATE:

RE: Chemical Labels

We are using (number) of your products and in evaluating the label(s) on (this/these) product(s), we determined that the label(s) (is/are) not appropriate for the following reason(s):

Product Name	Reason Label Is Not Appropriate

Please clarify the wording on (this/these) label(s) or send (a) revised label(s). Your prompt attention is necessary for us to fully implement our Hazard Communication Program.

Thank you for your cooperation.

Sincerely,

Appendix F: Employee Hazard Communication (HAZCOM) Training Record

The following employee(s) have completed training in Hazard Communication.

Employee's Name	Employee's Signature	Date of Training	Trainer	Trainer's Signature

Appendix G: Hazard Communication (HAZCOM) Review Log

Date	Revision	Brief Description of Any Changes	Signature
June 2019	-	Development of the Program	Chintan Amin

Appendix H: Globally Harmonized System (GHS) Quick Summary

GHS Hazard Pictograms

Physical Hazard

- Oxidizers

- Gases Under Pressure

- Flammables
- Pyrophoric
- Self-Heating
- Self-Reactives
- Organic Peroxides
- Emits Flammable Gases

- Explosives
- Self-Reactives
- Organic Peroxides

Environmental Hazard

- Aquatic Toxicity

Health Hazard

- Acute Toxicity (fatal or severe)

- Skin Corrosion/Burns
- Eye Damage
- Corrosives to Metals

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

- Irritant (skin & eye)
- Skin Sensitizer
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer
- Acute Toxicity (harmful)

GHS Safety Data Sheets (SDS)*

Section 1: Product Identification
- Product name, manufacturer name and contact info, emergency phone number

Section 2: Hazard(s) Identification
- Hazard pictograms, hazard statements, precautionary statements, NFPA, HMIS rating
- *Hazard Statements*
  - Letter "H" for hazards
  - Number designating the type of hazard as follows:
    - "2" – Physical Hazards
    - "3" – Health Hazards
    - "4" – Environmental Hazards
- *Precautionary Statements*
  - Letter "P" for hazards
  - Number designating the type of precautionary statement as follows:
    - "1" - General Precautionary Statements
    - "2" – Prevention Precautionary Statements
    - "3" – Response Precautionary Statements
    - "4" – Storage Precautionary Statements
    - "5" – Disposal Precautionary Statements

Section 3: Composition/Information on Ingredients
Section 4: First-Aid Measures
Section 5: Fire-fighting Measures
Section 6: Accidental Release Measures
Section 7: Handling and Storage
Section 8: Exposure Controls/Personal Protection Equipment (PPE)
Section 9: Physical and Chemical Properties
Section 10: Stability and Reactivity
Section 11: Toxicological Information
Section 12: Ecological Information
Section 13: Disposal Considerations
Section 14: Transport Information
Section 15: Regulatory Information
- Proposition 65 warnings (whether an item is listed in Prop 65 list)

Section 16: Other Information
- Author's name, SDS preparation/revision date
- NFPA and HMIS rating

*** FORMERLY KNOWN AS MATERIAL SAFETY DATA SHEETS (MSDSs)**

GHS Labeling

Product Name: Toxiflame A
Product Code: 12345
→ **Product Identifier**

Hazard Pictograms

Hazard Statements (Physical, Health, and Environmental)
- Highly flammable liquid and vapor.
- May cause liver and kidney damage.
- Hazardous to aquatic environment.

Signal Word
Danger (for more severe hazards)
Warning (for less severe hazards)

Precautionary Statements
Keep container tightly closed. Store in cool, well ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Only use non-sparking tools. Use explosion-proof electrical equipment. Take precautionary measure against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear Protective gloves. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center. If on skin (on hair): Take off immediately any contaminated clothing. Rinse the affected area with water for 15 minutes.

Supplemental Information

Directions for use
_____
_____
_____
Fill weight: _____ Lot Number____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

Supplier Identification

Company Name: XYZ Corp.
Street Name: _____
City: _____ **State:** ___
Country: _____
Emergency Phone Number:
123-456-7890

Appendix I: Definitions[2]

Acid: Any chemical with a pH between 0 and 6. Acids are corrosive and cause severe burns.

Acute Effect – Usually occurs rapidly as a result of short-term exposure.

ACGIH (American Conference of Governmental Industrial Hygienists): A consensus organization comprised of professional industrial hygienists. ACGIH studies chemical exposures and publishes recommended occupational exposure limits for hundreds of chemicals and physical agents.

Aerosol: A suspension of tiny particles or droplets in the air, such as dust, mist, or fumes.

Alkali (or Base): Any chemical substance with pH values from 8 to 14. Alkalis are corrosive and cause severe burns.

Antidote: A remedy to relieve, prevent, or counteract the effects of a poison.

Auto-ignition Temperature: The lowest temperature at which an air mixture of the chemical will ignite without a spark or a flame.

Boiling Point: The temperature at which a liquid changes to a vapor state, at a given pressure, usually expressed in degrees Fahrenheit at sea level pressure. Flammable materials with low boiling points generally present special fire hazards.

Carcinogen: Causes cancer.

CHEMTREC: The Chemical Transportation Emergency Center is a national center established by the Chemical Manufacturers Association (CMA) in Washington DC to relay pertinent emergency information concerning specific chemicals on request. (CHEMTREC's 24-hour toll free phone number is 800-424-9300). This number should only be used by those who respond to chemical transportation emergencies.

Chronic effect: Generally occurs as a result of long-term exposure, and are of long duration.

Combustible dust: A term not formally defined in the Rule, is a particulate solid that becomes a fire or explosion hazard when suspended in air or in another oxidizing medium over a range of concentrations, regardless of the particle size or shape.

Combustible liquid: Any liquid having a flashpoint at or above 100°F, but below 200°F.

Corrosive: A chemical is corrosive if it has a pH of ≤2.0 or ≥12.5, as well as the ability to corrode steel (SAE 1020) at a greater than 6.35 mm (0.25 inch) per year at a test temperature of 55°C (130°F).

Dermal toxicity: Adverse effects resulting from skin exposure to a substance.

[2] Some of the definitions have been taken from University of California – Irvine (UCI)'s HAZCOM Program.

Exposure: Any situation arising from work operations where an employee may ingest, inhale, absorb through the skin or eyes, or otherwise come into contact with a hazardous substance.

Flammability limits: The range of gas or vapor concentration in the air that may ignite or explode if an ignition source is present.

Flammable liquid: Any liquid having a flash point below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

Flammable solid: A solid, other than a blasting agent or explosive, as defined in 29 CFR 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing processing or which can be ignited readily and when ignited, burns so vigorously and persistently as to create a serious hazard.

Flashpoint: The temperature at which a liquid will give off enough flammable vapors to ignite if an ignition source is present.

Hazardous chemical: Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, a hazard not otherwise classified, or is included in the List of Hazardous chemicals prepared by the Director pursuant to Labor Code section 6382.

Hazard not otherwise classified (HNOC): An adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

Hazardous substance: Any substance which is a physical hazard or a health hazard or is included in the List of Hazardous chemicals prepared by the Director pursuant to Labor Code section 6382.

Health hazard: A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term “health hazard” includes substances which are carcinogenic, 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 skin, eyes, or mucus membranes.

Immediate use: The hazardous substance 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.

Importer: The first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or purchasers within the United States.

Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

LC (Lethal concentration): A concentration of a substance being tested which will kill a test animal.

LC50 (Lethal concentration 50%): The concentration of a material in air which, on the basis of laboratory testing, is expected to kill 50% of a group of test animals when administered as a single exposure. Generally, more toxic materials have lower LC_{50}.

LD (Lethal dose): A concentration of a substance (dose) being tested which will kill a test animal.

LD50 (Lethal dose 50%): A single dose of a material which on the basis of laboratory tests, is expected to kill 50% of a group of test animals. The LD_{50} dose is usually expressed in milligrams or grams of material per kilogram of animal body weight. Generally, more toxic materials have lower LD_{50}.

LEL (Lower Explosive Limit): The lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present. At concentration lower than the LEL, there is not enough fuel to sustain combustion.

Manufacturer: A person who produces, synthesizes, extracts, or otherwise makes a hazardous substance.

Oxidizers: Chemicals other than a blasting agent or explosives as defined in 29 CFR 1910.109(a) that initiate or induce combustion, either by giving off oxygen or through electron-transfer. Common example is atmospheric oxygen.

Particularly Hazardous chemicals (PHSs): Some chemicals may present extreme risk potential to employees/students if not handled appropriately; therefore, these substances may require additional control measures when used. See SUA's Chemical Hygiene Plan for more details or contact university's Chemical Hygiene Officer (CHO).

PEL (Permissible Exposure Limit): The legally enforced exposure limit for a substance established by OSHA regulatory authority. The PEL indicates the permissible concentration of air contaminants to which nearly all workers may be repeatedly exposed eight (8) hours a day, forty (40) hours a week, over a working lifetime (30 years) without adverse health effects.

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) or water-reactive.

ppb (Parts per billion): A unit for measuring the concentration of a gas or vapor in air - parts (by volume) of the gas or vapor in a billion parts of air.

ppm (Parts per million): a unit for measuring the concentration of a gas or vapor in air - parts (by volume) of the gas or vapor in a million parts of air.

Proposition 65 (Prop 65) – Safe Drinking Water and Toxic Enforcement Act of 1986: A ballot enacted to protect California citizens and the State's drinking water source from chemicals known to cause cancer, birth defects or other reproductive harm, and to inform citizens about exposures to such chemicals.

Pyrophoric gas: A chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

Reproductive toxins: Substances that affect either male or female reproductive systems and may impair the ability to have children.

Safety Data Sheets (SDSs): Written or printed material concerning a hazardous chemical which is prepared in accordance with section 5194(g).

Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical. Common example is poison ivy and pollen.

Simple asphyxiant: A substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

STEL (Short-Term Exposure Limit): A 15-minute Time-Weighted Average (TWA) exposure that should not be exceeded at any time during a workday.

Systemic poison: A poison, which spreads throughout the body, affecting all body systems and organs. Its adverse effect is not localized in one spot or area.

Systemic toxicity: Adverse effects caused by a substance, which affects the body in a general rather than local manner.

Target organ toxin: A toxic substance that attacks a specific *organ of the body. Example*: *overexposure to carbon tetrachloride can cause liver damage.*

Teratogen: A substance that may cause malformations in the fetus upon exposure. *Example: thalidomide*.

TLV (Threshold limit value): A term used by ACGIH to express the airborne concentration of a material to which nearly all persons can be exposed daily, without adverse effects. ACGIH expressed TLVs in three ways:

- **TLV-TWA**: The allowable time-weighted average concentration for a normal 8-hour work-day or 40-hour work-week.
- **TLV-STEL**: The short-term exposure limit or maximum concentration for a continuous 15-minute exposure period (maximum of four such periods per day, with at least 60 minutes between exposure periods, and provided that the daily TLV-TWA is not exceeded).
  TLV-C: The ceiling limit - the concentration that should not be exceeded even instantaneously.

UEL (Upper Explosive Limit): Upper explosive limit or upper flammable limit of a vapor or gas. The highest concentration of a substance in air that will combust when an ignition source is present.

Workplace: Any place, and the premises appurtenant thereto, where employment is carried on, except a place the health and safety jurisdiction over which is vested by law in, and actively exercised by, any state or federal agency other than the Division.