

## MARICOPA COUNTY COMMUNITY COLLEGE DISTRICT

### Hazard Communication (HAZCOM) Program

March 1, 2013

#### **I. PURPOSE**

It is the responsibility of the Maricopa County Community College District (MCCCD) to provide a safe workplace for its employees. The main objective of the MCCCD HAZCOM Program is to minimize employee exposure to hazardous chemicals in the workplace. The HAZCOM Program ensures employees are informed of the potential hazards in their workplace and the appropriate means to protect themselves. When chemicals are used by MCCCD employees in the performance of their duties, these activities shall be conducted in accordance with the provisions of the HAZCOM Program. This written HAZCOM Program shall be readily available to all employees and regulatory agencies upon request.

MCCCD is classified as a non-manufacturing employer where employees use a variety of hazardous chemicals (in quantities smaller than that of comparable industry) during their employment. Therefore, the Hazard Communication Standard (a.k.a. Employee Right-to-Know) applies to any MCCCD facility or department using hazardous chemicals. Hazardous Chemicals are defined by OSHA as any chemical which poses a physical hazard or a health hazard and is determined by information in the Material Safety Data Sheet or MSDS.

At MCCCD, we address the requirements of these regulations through this written HAZCOM standard. This written program requires MCCCD to do the following:

- Ensure Hazard Identification
- Determine Employee Exposure to Hazardous Chemicals
- Develop a Written HAZCOM Program
- Inform Employee of Identified Potential Hazards
- Provide Training and Information of Safe Work Practices
- Establish a File of the Chemicals Used on MCCCD Locations
- Acquire and Distribute MSDS for Each Chemical Used
- Maintain a Container Labeling System
- Establish Record Keeping Procedures

#### **II. DEFINITIONS**

Definitions for commonly used and universal words are located in Appendix A of this document.

#### **III. RESPONSIBILITIES**

- A. The College President is charged with the overall responsibility to develop and implement a HAZCOM Program for their respective college. The HAZCOM Program ensures regulatory

compliance and provides employees with the information and training needed to protect them while using hazardous chemicals. The College President is also responsible for the following:

- Maintaining Master Chemical Inventories for Their Campus
- Providing Technical Assistance and Training to Departments
- Maintaining Training Records
- Conducting Audits and Evaluations of Program Effectiveness

B. Academic Deans, Directors and Chairs for each department are responsible for the following:

- Ensuring participation of affected employees in occupational health and safety (OHS) training programs.
- Establishing and implementing department specific information and training programs.
- Maintaining required MSDS and ensuring availability to employees.
- Providing an inventory or Master List of Hazardous Chemicals used within their department(s).
- Notifying all vendors and contractors working in locations under their control of hazard chemicals in the area, making MSDS available to them and obtaining written acknowledgement or receipt of this information.
- Ensuring that prior to work, any outside contractor or vendor provides the area department and/or unit with an MSDS or each chemical being used during the work project and a copy of each MSDS is available at the location for each chemical being used for the entire duration the chemical is in use.

C. MCCCCD Employees are responsible for the following:

- Knowing the location of and how to use the information provided in the MSDS.
- Ensuring the proper labeling of hazardous chemicals.
- Attend initial and follow-up HAZCOM training as required.
- Reporting potential hazards, accidents and near-hits to their supervisor immediately.
- Assisting their supervisor with implementing recommendations for improving safety.

D. Vendors, Contractors and Visitors are responsible for the following:

- Notifying their MCCCCD contact of their activities and reviewing any information provided related to Hazardous Chemicals in use at MCCCCD.
- Providing MSDS and related hazard information to their MCCCCD contact prior to utilizing any Hazardous Chemicals associated with their activities at MCCCCD.
- Complying with all applicable regulations and policies related to their activities related to their purchase order, contract or any other agreement with MCCCCD.

- Informing each MCCCDC or College department of any Hazardous Chemical(s) they may be using during the performance of their work.

#### IV. IDENTIFICATION OF HAZARDOUS MATERIALS

The responsibility for determining whether a chemical is hazardous lies with the chemical manufacturer or importer of a chemical. End users and/or supervisors may rely on the evaluation received from these suppliers, in the form of MSDS and warning labels. A chemical inventory shall include a list of chemicals, including compressed gas cylinders, used in the workplace covered by the HAZCOM Program and can be prepared by documenting the names of chemicals having a warning label indicating a potential hazard (i.e. level 4 flammable or corrosive).

In addition to chemicals in containers, other substances generated in work operations such as welding fumes and some dusts shall also be listed in the inventory. All identified chemicals must have a corresponding MSDS available in a binder or electronically. The binder or electronic file must be identified with the acronym MSDS on the spine or file name or folder and be located in an area accessible to all employees at all times, regardless of work shift.

#### V. INVENTORY OF HAZARDOUS MATERIALS

Departments that employ individuals who may be exposed to Hazardous Chemicals in the course of their job duties shall prepare a chemical inventory. The designated department shall maintain a current chemical inventory. A copy of the prepared chemical inventory shall be forwarded to the Risk Management Division and updated at least annually. Chemical inventories shall be place with a copy of the written HAZCOM Program and stored in the MSDS binder at each college or location and shall be available to all employees at all times, regardless of shift work.

The following identifies some, but by no means all, types of potentially Hazardous Chemicals that may be present in the workplace:

Acids	Adhesives	Aerosols	Battery Fluids	Bleach
Catalysts	Caustics	Cleaning Agents	Coatings	Compressed Gas
Degreasing Agents	Dusts	Etching Agents	Flammables	Foaming Resins
Fungicides	Gasoline	Glues	Greases	Herbicides
Industrial Oils	Inks	Insecticides	Janitorial Supplies	Kerosene
Lacquers	Lye	Paints	Pesticides	Plastics
Process Chemicals	Resins	Sealers	Shellacs	Solders
Solvents	Surfactants	Thinners	Varnishes	H2O Treat Chem.

#### VI. DEPARTMENT LABELS AND OTHER WARNINGS

Department supervisors are responsible for identifying Hazardous Chemicals in the workplace and effectively communicating information available for the manufacturers MSDS and labels or other cautionary warning to employees. All Hazardous Chemical containers in the workplace must clearly

identify, in English, the hazardous contents of the container. The supervisor has the responsibility to ensure all employees are aware of the requirements to have all Hazardous Chemical container labels affixed, legible and containing the appropriate information. Supervisors are also responsible to enforce this requirement.

All secondary container(s) shall use either the National Fire Prevention Association (NFPA) or the Hazardous Materials Identification System (HMIS) label or manufacturer's label for the container. Supervisors will ensure the appropriate labels or labeling equipment are available. If the manufacturer's label is unavailable, the appropriate information should be copied from the MSDS to the blank HMIS label (refer to Appendix B). If it is not practical to label a container, the proper chemical hazard information may be placed on a sign near the container, which is clearly visible to employees. Containers of Hazardous Chemicals at MCCCCD must be received with a label that provides the appropriate identification and the hazards associated with the chemical. The label is to be supplied by the manufacturer, importer or distributor of the chemical. If the container arrives without a label, an HMIS label will be affixed to the container in the following manner:

- Identify the chemical name or common name from the MSDS.
- List the name and address, including phone numbers, of the chemical manufacturer.
- Complete the HMIS placard with the appropriate hazard warnings completed.

Labels will not be removed unless the container is immediately re-labeled or the chemical in the container is emptied, cleaned and/or a new type of chemical is placed in the container at which time the container must be re-labeled with the identity of the new chemical.

The HMIS labeling system operates on the same principle as the NFPA placard. The color blue indicates a health hazard, the color red indicates flammability, the color yellow indicates reactivity and other special information (i.e. what personal protective equipment or PPE to wear) and will be listed in the white section of the placard. The HMIS also uses numbers, from 0 through 4 to indicate the severity of the hazard. Refer to the information in Appendix B.

It should be noted the NFPA 704 (Diamond) Labeling System and HMIS are similar in many respects, they are not the same. When transferring information from the MSDS make certain you understand the rating for the system being used because many manufacturers may use both rating systems.

## **VII. MATERIAL SAFETY DATA SHEETS**

Chemical manufacturers and distributors are required by OSHA to provide MSDS to consumers. A MSDS is provided to ensure the end user of chemical products is informed of the hazards associated with the use of the chemical and what safety precautions should be utilized to prevent loss of life and property. The same MSDS may be used for several chemicals if they have similar hazards and contents. Updated or new MSDS will be distributed immediately upon receipt. Each department must maintain a complete and accurate MSDS for each chemical used in the workplace upon purchase of a chemical.

When new information becomes available concerning the hazards of a chemical or improved method of protection for employees, the manufacturer, importer or distributor must provide a MSDS with the updated information with the next shipment or, if no further chemical product is ordered, within three (3) months of publication to end users (customers). If the manufacturer, importer or distributor fails to send a MSDS with a shipment labeled as a Hazardous Chemical, the receiving department at MCCCCD must obtain one from the manufacturer, importer or distributor as soon as possible. Similarly, if the MSDS is incomplete or unclear, the department should contact the manufacturer, importer or distributor to get clarification or obtain the missing information. No chemical shall be used by any MCCCCD employee unless a current MSDS is available.

A MSDS is usually made up of a least ten (10) sections if they are in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). GHS is an internationally agreed upon system set up to consolidate all other systems and have one standard for chemical safety information. GHS uses consistent criteria for classification and labeling on a global level. Some of the information on an MSDS needing to be reviewed prior to the use of each chemical is:

- Chemical product and company information.
- Composition and/or information on hazardous ingredients.
- Hazard identification including emergency overview.
- First Aid measures.
- Fire Fighting measures.
- Accidental release measures.
- Handling and storage.
- Exposure controls and personal protection.
- Physical and chemical properties.
- Stability and Reactivity

Additional sections may include information on toxicological, ecological, transport, disposal and regulatory information as well as any other information not covered in the above mentioned sections. A MSDS binder will be located in designated work areas. It is recommended the binder be red in color with the letters MSDS clearly labeled on the binder's spine. All employees shall be informed of the location of the binder. Additionally, the binder will be readily available to all employees at all times regardless of their work shift. If an electronic file is maintained for MSDS, this file must be accessible at all times by all employees. Supervisors whose employees use chemicals in the workplace will be responsible for ensuring the MSDS binder is reviewed at least annually, kept up to date (new MSDS in and old MSDS out), chemicals are listed in alphabetical order and/or the electronic file is up to date.

Copies of the MSDS will be made available for any employee or compliance inspector upon request. The department supervisor will be notified if a non-employee requests a copy of any MSDS.

#### **VIII. RESOURCES FOR OBTAINING MSDS**

MSDS can be obtained by contacting the manufacturer or vendor of the chemical product. Most MSDS can be found by a simple web search using a search engine such as Google or Bing. If you have difficulty locating an MSDS please contact the District Occupational Health and Safety Manager at (480) 731-8840 for assistance.

## **IX. EMPLOYEE INFORMATION AND TRAINING**

Departments shall have a written training and information program for all affected employees or will ensure participation by affected employees in required and centralized HAZCOM Program training. Employee training shall be provided when employees are initially hired and whenever a new chemical hazard is introduced into the workplace. The workplace supervisor will ensure employees are trained in the HAZCOM Program and also provided additional training on specific hazards associated with their workplace and/or job duties. The Employee Organization Learning Team (EOLT) has developed and provides centralized HAZCOM Program training opportunities for all employees at regular intervals. Additional classes can be arranged for specific locations and/or populations based on department requests. Contact EOLT at (480) 731-8763.

At a minimum, employees shall be trained on:

- Requirements of OSHA's Hazard Communication Standard (29 CFR 1910.1200, revised).
- The physical and health hazards of chemicals used in the workplace.
- Methods and observations that may be used to detect the presence or release of a Hazardous Chemical in the workplace.
- How employees adequately protect themselves to minimize their exposure.
- Location of the chemical inventory and MSDS binder or database in the workplace.
- Details of MCCCCD's HAZCOM Program including the proper use and understanding of the labeling system; how employees can obtain and use the hazard information provided.
- Location of the written MCCCCD HAZCOM Program.

## **X. TRADE SECRETS**

A trade secret allows a manufacturer to maintain their market advantage over competitors by designating certain chemical formulations as being proprietary. For example, a trade secret may be a confidential device, pattern, information or chemical formulation. Chemical industry trade secrets are generally formulas, process data, or a specific chemical identity. The latter term is the type of trade secret referred to in OSHA's Hazard Communication Standard (29 CFR 1910.1200, revised). The term "trade secret" includes the chemical name, the Chemical Abstracts Services (CAS) Registry Number, or any other specific information that reveals the chemical's precise designation. It does not, however, include common names for chemicals.

The standard maintains a balance between the need to protect exposed employees and the employer's need to maintain confidentiality of a legitimate trade secret. This is achieved by providing for limited disclosure to health professionals who are providing medical or other occupational health services to exposed employees under specified conditions of need and confidentiality. The chemical manufacturer,

importer, distributor and the employer must immediately disclose the specific chemical identity of the Hazardous Chemical to a treating physician or nurse when the information is needed for proper emergency or First-Aid treatment. As soon as circumstances permit, the chemical manufacturer, importer, distributor and the employer may obtain a written statement of need and a confidentiality agreement.

Under the contingency described here the treating physician or nurse has the ultimate responsibility for determining if a medical emergency exists. At the time of the emergency the professional judgment of the physician or nurse regarding the situation must form the basis for triggering the immediate disclosure requirement. Because the chemical manufacturer, importer, distributor and the employer can demand a written statement of need and a confidentiality agreement to be completed after the emergency is abated, further disclosure of the trade secret can be effectively controlled. In non-emergency situations, chemical manufacturers, importers, distributors and the employer must disclose the withheld specific chemical identity to health professionals providing medical or other occupational health services to exposed employees if certain conditions are met. In this context, the term "health professionals" include physicians, occupational health nurses, industrial hygienists, toxicologists and epidemiologists.

## **XI. EMERGENCY PROCEDURES**

Each department must develop emergency procedures specific to their operation(s) and all affected employees must be aware of these procedures. These procedures should include (but not be limited to) actions or contingencies for the following:

- Evacuations due to fire, chemical spills and other situations.
- First Aid.
- Shelter in place or active shooter emergencies.
- Location of emergency equipment (i.e. fire extinguishers, fire alarm pull stations, emergency showers, eyewashes, etc.).

Faculty and staff who discover or are involved in a Hazardous Chemical emergency are responsible for taking appropriate action to protect themselves and the college location by notifying the appropriate authorities and following established protocols outlined by MCCCCD Emergency Management.

## **XII. HAZARD COMMUNICATION AND OUTSIDE CONTRACTORS**

Each department is responsible for notifying all vendors and contractors working in locations under their control of Hazardous Chemicals in those areas, making MSDS available to the vendor and/or contractor and obtaining written acknowledgment of receipt of that information.

Prior to the initiation of work, outside contractors are to provide the location's Director of Facilities (an MCCCCD employee) a clean, legible and recent copy of MSDS for each chemical being used during the work project and shall maintain a copy for each chemical being used by the contractor for the duration the chemical is used or until job completion, whichever is greater.

The construction location's Director of Facilities will to the following:

- Forward the contractor supplied MSDS to the affected area supervisor and/or department.
- Ensure department supervisors review the contractor supplied MSDS with affected employees working in the affected area.
- Ensure the contractor either removes all chemicals daily from the job site or secures the chemicals on site in a secure container approved for chemical storage.
- Ensure the contractor removes all project related chemicals from the job site at the completion of the job.
- Notify affected department personnel (supervisors) when the contractor has completed the job and there should be no further need for maintaining contractor supplied MSDS.

### **XIII. ACCIDENT REPORTING**

Employees shall report all accidents and incidents to their supervisor immediately or as soon as possible. Supervisors shall ensure an Employee Injury Report is completed for any accident, incident or near-hit within 72 hours of notification of the occurrence. All employees will be free from any reprisals for reporting accidents, incidents or near-hits. Reporting all such events will assist the Risk Management office in addressing areas in need of corrective procedures to avoid recurrence of the accident.

### **XIV. AUDITS AND PROGRAM EVALUATION**

Department supervisors are responsible for establishing, implementing and maintaining a system of communication to relay health and safety information to employees. Resources are available by contacting the District Occupational Health and Safety Manager at (480) 731-8840.

Supervisors and/or the campus safety committee(s) are expected to conduct regular, periodic audits of the workplace to evaluate work practices and identify potential hazards. The frequency of audits should be determined by the level of risk associated with a department's specific operation or process; however, audits should occur annually as a minimum or whenever there is a change in the type of Hazardous Chemicals, processes, procedures or equipment being used which may alter the hazards posed to employees. The HAZCOM Program should be evaluated for its effectiveness in addressing issues and providing guidance for specific departments or areas. Contact the District Occupational Health and Safety Manager at (480) 731-8840 for comments, assistance or more information.

Supervisors (or an appointed designee) will conduct periodic inspections to determine individual compliance with this HAZCOM Program. Inspections may be performed in conjunction with the periodic program audit. A copy of inspection results will be forwarded to the Risk Management office whenever completed. Corrective action will be completed in a reasonable amount of time and documented. Improvement opportunities related to training, labeling or maintenance of MSDS should be completed within 30 days of the finding. Audit reports shall include the date the audit was conducted and the name of the employee(s) conducting the audit.

### **XV. RECORD KEEPING**



Documentation and records associated with this program shall be maintained as required by the Hazard Communication Standard (29 CFR 1910.1200, revised). Individual departments, supervisors or Human Resources shall maintain records as indicated below:

- Each department shall maintain the most recent chemical inventory associated with their operations.
- Each department shall maintain MSDS including archives of Hazardous Chemicals no longer in use.
- EOLT shall maintain copies of employee training records.
- Department who present their own or additional training on the Hazard Communication Standard (29 CFR 1910.1200, revised) shall maintain their own training records for their employees.
- Records of training shall be made available to employees and authorized agents of the Federal, state or local governments upon request.

# **APPENDIX A**

## **DEFINITIONS**

**ACGIH:** American Conference of Governmental Industrial Hygienists; an organization of professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGIH develops and publishes recommended occupational exposure limits (see "TLV") for hundreds of chemical substances and physical agents.

**Acute:** Severe, often dangerous conditions in which relatively rapid changes occur.

**Acute Exposure:** A single, brief exposure to toxic substances. Effects (i.e., adverse effects on the human body) if any are evident soon after the exposure, could come quickly to a crisis.

**Alloys:** A mixture of metal (such as brass), in some cases a metal and a non-metal.

**Ambient Temperature:** Temperature of the immediate surroundings.

**Appearance/Odor:** The color, physical state at room temperature, size of particles, characteristics of the material. Odor is described in comparison to common familiar "smells." Threshold refers to the concentration required in the air before vapors are detected or recognized.

**Asphyxiant:** A chemical (gas or vapor) that can cause death or unconsciousness by suffocation. Simple asphyxiants such as nitrogen, either use up or displace oxygen in the air. They become especially dangerous in confined or enclosed spaces. Chemical asphyxiant, such as carbon monoxide and hydrogen sulfide, interfere with the body's ability to absorb or transport oxygen to the tissues.

**Aspiration Hazard:** The danger of drawing a fluid into the lungs and causing an inflammatory response to occur.

**Auto-ignition Temperature:** Lowest temperature at which a flammable gas or vapor-air mixture will ignite from its own heat source or other contacted heat source.

**Boiling Point:** Temperature at which vapor pressure of a liquid equals atmospheric pressure.

**C.A.S. Number:** The number assigned to chemicals or products by the Chemical Abstracts Service.

**Carcinogen:** A substance or agent capable of causing or producing cancer.

**Catalyst:** A substance which changes the speed of a chemical reaction but undergoes no permanent change itself. An example of a catalyst is the platinum used in automotive catalytic converters on the exhaust system.

**Chronic Effect:** An adverse effect on a human or animal. Symptoms develop slowly over a long period of time or recur frequently.

**Combustible:** A substance capable of fueling a fire. Also a term used to classify certain liquids on the basis of their flashpoints. Also see "flammable".

**Compressed Gas:** Any gas which is under pressure greater than that of the outside atmosphere. An example is the air in automobile tires.

**Corrosive Material:** As defined by the Department of Transportation (DOT), a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact; or in the cases of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

**Cutaneous:** Pertaining to or affecting the skin.

**Decomposition:** Breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay or other processes) into simpler substances.

**Dermal:** Pertaining to or affecting the skin.

**Dyspnea:** Shortness of breath, difficult or labored breathing.

**Erythema:** A reddening of the skin.

**Evaporation Rate:** The ratio of time required to evaporate the same volume of a reference liquid (ether). The higher the ratio, the slower the evaporation rate.

**Explosive:** A chemical that causes a sudden release of pressure, gas and heat when subjected to shock, pressure, or high temperature.

**Exposure Limit:** Limit set to minimize occupational exposure to a hazardous substance. Recommended occupational exposure limits used are American Council of Governmental Industrial Hygienists' Threshold Limit Values (TLV) and Occupational Safety and Health Administration Permissible Exposure Limits (PEL).

**Extinguishing Agents (Methods):** Agent(s) suitable for controlling or putting out a fire, when properly applied.

**Flammable:** A material which is easily ignited and burns with extreme rapidity.

**Flammable Limits:** The range of a vapor/gas concentration in air that will burn or explode if an ignition source is present.

**Flash Point:** The minimum temperature at which a liquid gives off sufficient vapor to form, with air, an ignitable mixture.

**General Exhaust:** Removal of contaminated air from a large area by an air circulation or exchange system.

**Generic Substance:** A substance identified by its general chemical name and/or formula.

**Hazard Communication (HAZCOM) Program:** The written program employers must develop and use which specifies employee training for routine and emergency use of all potentially hazardous chemicals in the work place, details pertaining to chemical labels, storage and Material Safety Data Sheets and a complete list of all hazardous chemicals in the work place.

**Hazardous Chemical:** Any chemical which poses a physical hazard or a health hazard. This is determined by information in the MSDS.

**Health Hazard:** Any chemical for which there is at least one scientific study that shows it may cause acute or chronic health symptoms. This includes chemicals which are carcinogens, toxic or highly toxic, irritants, corrosives, sensitizers, or chemicals that effect target organs including the lungs, kidneys, nervous system, pulmonary system, reproductive system, skin and eyes.

**Highly Toxic:**

- A chemical which has been found through testing of laboratory animals to cause death when exposed at certain levels.
- A chemical is highly toxic to ingest if it has a median lethal dose (LD50) of less than 50 mg/kg. This means that 50 percent of the test animals (rats) died when given an oral dosage of 50 milligrams for each kilogram of body weight.
- A chemical is highly toxic to touch if it has an (LD50) rating of less than 200 mg/kg, meaning that 50 percent of the lab animals (rabbits) die after having continuous skin contact at that dosage for 24 hours or less.
- A chemical is highly toxic to breathe if it has a (LC50) rating of less than 200 PPM for gas or vapor and a 2 mg/L for dust, fume, or mist when exposed for an hour or less.

**Ignition Source:** Anything that provides heat, sparks, or flame sufficient to cause combustion/explosion.

**Incompatible:** Materials which could cause dangerous reactions from direct contact with one another are described as incompatible.

**Ingestion:** The drawing of a substance into the body (lungs) through the nose, mouth, and breathing passages, in the form of a gas, vapor, fume, mist, or dust.

**Irritant:** A substance which will cause an inflammatory response or reaction of the eye, skin, or respiratory system, following single or multiple exposures.

**LC50:** Lethal Concentration 50; a single dose of material which on the basis of laboratory tests is expected to kill 50% of a group of test animals when administered by mouth (oral) or applied to the skin (dermal or cutaneous).

**LD50:** Lethal Dose 50; a single dose of material which on the basis of laboratory tests is expected to kill 50% of a group of test animals. The material may be administered by mouth (oral) or applied to the skin (dermal or cutaneous).

**LEL (Lower Explosive Limit):** The lowest concentration of a gas or vapor in the air that can produce ignition or explosion.

**Local Exhaust:** A system for capturing and exhausting contaminants from the air at the point where the contaminants (gases, particulates) are released. Not to be confused with "general exhaust".

**MSDS (Material Safety Data Sheet):** Written or printed material about a chemical that specifies its hazards, safe use and other information. It is prepared by the chemical manufacturer, and is required by federal law.

**Mechanical Exhaust:** A powered device, such as a motor-driven fan or air/street venturi tube, for exhausting contaminants from a work place, vessel, or enclosure.

**Narcosis:** Stupor or unconsciousness caused by exposure to a chemical.

**Neutralize:** To render chemically neutral or harmless; neither acid nor base; to counteract the activity or effect of; the addition of a base (sodium hydroxide) to an acid (hydrochloric acid) results in water and a salt (sodium chloride), thus the acid has been "neutralized" or rendered harmless.

**Odor Threshold:** The minimum concentration of an airborne, toxic substance whose odor is detectable to the average individual. Depending on whether it is above or below substances TLV, it may be indicative of whether additional ventilation is required.

**Oral:** Of, through, pertaining to, or affecting the mouth.

**OSHA:** Occupational Safety and Health Administration of the U.S. Department of Labor; a federal agency with safety and health enforcement authority for most of U.S. industry and business.

**Oxidizer:** Department of Transportation defines oxidizer or oxidizing material as a substance that yields oxygen readily to stimulate the combustion (oxidation) of organic matter. Chlorate (ClO<sub>3</sub>), permanganate (MnO<sub>4</sub>) and nitrate (NO<sub>3</sub>) compounds are examples of oxidizers.

**PEL (Permissible Exposure Limit):** An exposure limit established by OSHA's regulatory authority. May be a time weighted average (TWA) limit or a maximum concentration exposure limit.

**Personal Protective Equipment (PPE):** Equipment designed to protect worker health and safety, e.g., chemical resistant gloves, safety glasses or goggles, face shields, etc.

**PPM (parts per million):** The unit for measuring the concentration of a gas or vapor in contaminated air. Also used to indicate the concentration of a particular substance in a liquid or solid.

**Physical Hazard:** A chemical which is proved to be a combustible liquid, compressed gas, explosive, flammable, oxidizer, pyrophoric, unstable (reactive) or water-reactive.

**Polymerization:** A chemical reaction in which a large number of relatively simple molecules combine to form a large chainlike molecule. A hazardous polymerization is a reaction which takes place at a rate which releases large amounts of energy.

**Pyrophoric:** A chemical which ignites spontaneously with air at 130 degrees F. or less.

**Respiratory Protection:** Devices for use in conditions exceeding set exposure levels. When properly selected, maintained and worn by the user, it will protect the users' respiratory system from exposure to airborne contaminants by inhalation.

**SCBA:** Self-contained breathing apparatus.

**Sensitizer:** A substance, which on first exposure, causes little or no reaction in man or test animals, but which on subsequent exposure(s) may cause a marked response not necessarily limited to the contact site. Skin sensitization is the most common form of the problem in the industrial setting, although respiratory sensitization to a few chemicals has been known to occur.

**Solubility in Water:** The percentage of a material (by weight) that will dissolve in water at a specific temperature.

- NEGLIGIBLE LESS THAN 0.1%
- LIGHT 0.1 TO 1.0%
- MODERATE 1 TO 10%
- APPRECIABLE MORE THAN 10%
- COMPLETE SOLUBLE IN ALL PROPORTIONS

**Solvent:** A substance which dissolves another substance.

**Specific Gravity:** The ratio of weight of volume of material to the weight of an equal volume of water usually at 60 F., otherwise specified H<sub>2</sub>O-1.

**Systemic:** Spread throughout the body, affecting many or all body systems or organs, not localized in one spot or area.

**TLV "Skin":** This designation sometimes appears alongside a TLV of PEL. It refers to the possibility of absorption of the particular chemical through the skin and eyes. Thus, the protection of large surface areas of skin should be considered to prevent skin absorption so that the TLV is not invalidated.

**Target Organ:** The specific organs or body systems that sustain hazardous effects from a toxic chemical are either long or short-term. Target organs could be the liver, kidney, central nervous system or skin.

**Toxic:** A substance which has a median lethal dose (LD<sub>50</sub>) of 50 to 500 mg/kg for ingestion, from 200 to 1,000 mg/kg within a 24-hour period for contact and from 200 to 2,000 PPM gas or vapor for inhalation.

**UEL (Upper Explosive Limit):** The highest concentration of a gas or vapor in air that can produce ignition or explosion.

**Unstable (Reactive):** A chemical which vigorously undergoes polymerization, decomposition, or condensation via shock, pressure, or temperature.

**Vapor Density:** The ratio of the density of a substance's vapor to the density of another substance's vapor, usually air. A vapor density of greater than one means that the substance is heavier than air.

**Vapor Pressure:** The pressure exerted by vapor, in confinement, over its liquid as it accumulates at a constant temperature.

**Water Reactive:** A chemical which reacts with water is to form flammable gas or produce a health hazard.



# **APPENDIX B**

## **HMIS LABELING SYSTEM**

## APPENDIX B: HMIS Labeling System

Chemical Name	
CAS#	
HEALTH	<input type="checkbox"/>
FLAMMABILITY	<input type="checkbox"/>
REACTIVITY	<input type="checkbox"/>
SPECIFIC	<input type="checkbox"/>

HEALTH	FLAMMABILITY	REACTIVITY
<b>4: Deadly:</b> even the slightest exposure to this substance would be life threatening. Only specialized protective clothing, for these materials, should be worn.	<b>4: Flash Point Below 73 and Boiling Point Below 100 Degrees Fahrenheit:</b> this substance is very flammable, volatile or explosive depending on its state. Extreme caution should be used in handling or storing these materials.	<b>4: May Detonate:</b> substances that are readily capable of detonation or explosion at normal temperatures and pressures. Evacuate area if exposed to heat or fire.
<b>3: Extreme Danger:</b> serious injury would result from exposure to this substance. Do not expose any body surface to these materials. Full protective measures should be taken.	<b>3: Flash Point Below 100 Degrees Fahrenheit:</b> flammable, volatile or explosive under almost all normal temperature conditions. Exercise great caution in storage or handling of these materials.	<b>3: Explosive:</b> substances that are readily capable of detonation or explosion by a strong initiating source, such as heat, shock or water. Monitor from behind explosion-resistant barriers.
<b>2: Dangerous:</b> exposure to this substance would be hazardous to health. Protective measures are indicated.	<b>2: Flash Point Below 200 Degrees Fahrenheit:</b> moderately heated conditions may ignite this substance. Caution procedures should be employed in handling.	<b>2: Unstable:</b> violent chemical changes are possible at normal or elevated temperatures and pressures. Potentially violent or explosive reaction may occur when mixed with water. Monitor from a safe distance.
<b>1: Slight Hazard:</b> irritation or minor injury would result from exposure to this substance. Protective measures are indicated.	<b>1: Flash Point Above 200 Degrees Fahrenheit:</b> this substance must be preheated to ignite. Most combustible solids would be in this category.	<b>1: Normally Stable:</b> substances that may become unstable at elevated temperatures and pressures or when mixed with water. Approach with caution.
<b>0: No Hazard:</b> exposure to this substance offers no significant risk to health.	<b>0: Will Not Burn:</b> substances that will not burn.	<b>0: Stable:</b> substances which will remain stable when exposed to heat, pressure or water.