SAN DIEGO MESA COLLEGE

Chemical Hygiene Program

Approved by the Safety Committee
May 21, 2026

REVISION RECORD

Revision Date	Revision #	Initials	Contents of Revision
12-6-18		MF	New Plan-Approved by Safety Committee
12-15-22		MF	Review and update
5/21/16		MF	Reviewed with no updates

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I. PURPOSE

The San Diego Community College District, recognizing that the health, safety, and well-being of its employees and Students are of paramount importance in the management of the District, affirms its commitment to create and maintain a safe and healthful working environment.

San Diego Mesa College's Chemical Hygiene Program (CHP) provides direction to minimize the exposure of employees, students, and the community to hazardous chemicals. This *Program* sets out provisions to control the exposure and release of hazardous chemicals by way of control methods, work practices, and personal protective equipment. The goal of the CHP is to control the intentional and unintentional movement of hazardous chemicals at San Diego Mesa College.

This program is applicable to all laboratories, maintenance and facilities operations that uses or stores hazardous chemicals or generates hazardous waste. All employees who handle non-household chemicals or household chemicals that are used in bulk amounts are also covered by this *Program*.

II. REGULATORY CITATIONS

American National Standards Institute Z358.1 2014 (eyewash shower)
California Code of Regulations, Title 8, § 339 (Haz substance list)
California Code of Regulations, Title 8, § 3302 (Haz liquids)
California Code of Regulations, Title 8, § 3382 (eye and face protection)
California Code of Regulations, Title 8, § 3400 (medical)
California Code of Regulations, Title 8, § 4650 (cylinders)
California Code of Regulations, Title 8, § 5143 (ventilation systems)
California Code of Regulations, Title 8, § 5154.1 (ventilation lab hoods)
California Code of Regulations, Title 8, § 5162 (eye wash and shower)
California Code of Regulations, Title 8, § 5164 (storage hazardous substances)
California Code of Regulations, Title 8, § 5191 (CHP)
California Code of Regulations, Title 8, § 5209 (carcinogens)
California Code of Regulations, Title 8, § 5533 (capacity of storage cabinets)
California Code of Regulations, Title 8, § 5543 (fire control)
California Code of Regulations, Title 8, § 6151 (portable fire extinguishers)
California Code of Regulations, Title 22, § 66261.9 (universal waste)
California Code of Regulations, Title 22, § 66262.32 (hazwaste marking)
California Code of Regulations, Title 22, § 66262.34 (accumulation time)
California Code of Regulations, Title 24, Part 2 (Building Code)
California Code of Regulations, Title 24, Part 9 (Fire Code)
California Health and Safety Code, § 25200.3.1 (lab waste)
California Health and Safety Code, § 25201.16 (aerosol cans)
California Health and Safety Code, § 25500 (Haz material business plan)
California Labor Code § 6360, et seq. (Haz substances information and training)
Code of Federal Regulations, Title 29, § 253 (welding)
Code of Federal Regulations, Title 40, § 262.34 (accumulation time)
Code of Federal Regulations, Title 49, § 172.204 (hazwaste manifest)
Code of Federal Regulations, Title 49, § 173.6 (hazwaste)
Code of Federal Regulations, Title 49, § 173.12 (hazwaste)
National Fire Protection Association 1, "Uniform Fire Code" § 63
National Fire Protection Association 10, "Standards for Portable Fire Extinguishers"
National Fire Protection Association 101, "Life Safety Code"

National Fire Protection Association, 704, "Standard System for the Identification of the Hazards of Materials for Emergency Response"
National Academy of Sciences, "Prudent Practices in the Laboratory"

III. DISTRICT POLICIES AND PROCEDURES

SDCCD Administrative Procedure 6800.1
SDCCD Administrative Procedure 7400.14

IV. AUTHORITY

The Chancellor has ultimate authority and responsibility for the health and safety programs within the District. Creating broad-based safety accountability is the responsibility of the Chancellor and District leadership.

The Chancellor has designated the Vice Presidents of Administrative Services to act as the *CHP* administrator at San Diego Mesa College.

To ensure effective implementation of this *Program*, all personnel with designated specific responsibilities are expected to understand and implement the procedures outlined in this document, together with the specific contents of this *Chemical Hygiene Program* for their assigned facility.

A. Chancellor's Designees

The Vice Presidents of Administrative Service has the authority and is responsible for the implementation and maintenance of this program, including:

1. Developing or adopting the necessary policies and programs to adequately maintain a safe and healthful work and learning environment at the facilities of their responsibility
2. Ensuring that formal inspections of each assigned workplace are conducted.
    a. The inspections shall include appropriate documentation of the physical workplace, chemical hazards, work practices, new processes, recently reported accidents, and employee suggestions
3. Conducting investigations of all chemical exposures
4. Ensuring that proper protective equipment for personnel who handle chemicals, is provided
5. Reporting all chemical hazards involving an imminent danger to employees or students immediately to the San Diego Mesa College President, with a recommendation for abatement
6. Recommending to the Safety Committee any additions or changes to the *Chemical Hygiene Program*
7. Assisting supervisors in conducting workplace hazard assessments to identify, evaluate, and correct chemical hazards
8. Designating a Chemical Hygiene Officers
9. Providing for training to those employees required to abide by this *Program*
10. Assigning designees to fulfill all aspects of this *Program*.

B. OEHS Coordinator

The OEHS Coordinator is responsible for the oversight and maintenance of this program,

including:

1. Reviewing the *Program* annually and updating, as necessary.
2. Evaluating the adequacy and consistency of chemical safety-related training at San Diego Mesa College.
3. Providing technical expertise to the Chancellor's Designee (the VPA), as requested and required.
4. Monitoring Cal/OSHA standards for relevant regulatory changes.
5. Provide technical guidance in the development and implementation of the *Chemical Hygiene Program* within all Departments.
6. Conducting periodic program audits and inspections, evaluating compliance with all Federal, State, County, District, Facility, and College chemical handling and hazardous waste regulations.
7. Monitoring and overseeing hazardous waste activities, including coordinating with the hazardous waste contractor.
8. Chancellor's Designee and/or OEHSC will send reports to District Risk Management for the following occurrences: incidents, exposures, and regulatory site visits and inspections
9. Maintaining the records of inspections, hazard abatements, and training.
10. Maintain and update annually San Diego County CERS

C. Facilities Services

The Facilities Services Department is responsible for the implementation of portions of this program, including:

1. Maintaining equipment necessary for the safe handling of chemicals, such as ventilation systems, eyewash and safety showers, fire extinguishers, and alarm systems
2. Maintaining appropriate permits, including filing required annual elements with the appropriate State and County departments

D. Supervisors

Supervisors are responsible for implementing and enforcing the provisions of this *Program*, including:

1. Identifying locations where chemicals are present and activities where chemicals are used in their area(s) of responsibility
2. Training employees on proper chemical hygiene practices
3. Providing personal protective equipment and technical expertise to employees
4. Identifying proper chemical and waste storage locations
5. Ensure employees comply with all aspects of this and related programs
6. Reporting to the OEHS Coordinator any chemical exposures, regardless of the route of entry (inhalation, absorption, ingestion, injection)
7. Assigning designees to fulfill all aspects of this *Program*.

E. Employees

Employees are responsible for

1. Completing all necessary training

2. Complying with all aspects of the *Chemical Hygiene Program*
3. Properly implementing safe chemical and waste handling practices in the accomplishment of their duties
4. Reporting all exposures and near misses to the appropriate supervisor
5. Staying informed of all chemical hazards they may come into contact with
6. Reporting any *Program* deficiencies to their supervisor and the OEHS Coordinator.

F. Students

While students are not specifically covered under the provisions of the regulations due to their non-employee status, students shall be made aware of chemical health and safety hazards in laboratories. Students are responsible for conducting each operation in accordance with prescribed chemical hygiene procedures. Blatant disregard for provisions of this program will result in the student being excused from the laboratory or other areas where chemicals are present.

V. DEFINITIONS

1. *Bonded*: a method of equilibrating the electrical potential difference between two containers to prevent the buildup of static electricity by using a conductor attached to both containers;
2. *Chemical:* for the purposes of this *Program,* a chemical is any liquid, solid, or gas that has been prepared and packaged for use, including any mixtures, dilutions, or solutions thereof; this definition does not include pesticides, food, food additives, food coloring, cosmetics, over-the-counter pharmaceuticals, medical devices, veterinary devices, alcoholic beverages, consumer products packaged for consumer use and used as intended and in amounts a consumer would use, tobacco or tobacco products, or water;
3. *Compressed gas cylinder:* also referred to as 'cylinder;' a pressure vessel designed for the sole purpose of containing high-pressure or liquefied gases above atmospheric pressure; equipped with a valve to control the release of contents, cylinders can range from low pressure (e.g., propane at 28 psi) to high pressure (e.g., oxygen at 4500 psi); sizes can range from 'lecture bottle' (12-18 inches) to liquefied cryogenic gas cylinders (>60 inches by 20 inches);
4. *Control measures:* means (physical or procedural) to reduce the level of risk associated with a hazard.
5. *Employee:* any individual who receives compensation from the San Diego Community College District in exchange for services, including employed students;
6. *Explosion proof:* also referred to as 'intrinsically safe;' electrical components that are approved for use in flammable atmospheres such that they do not present sources of ignition;
7. *Fume hood:* a cabinet enclosed on three sides, top and bottom with an integral mechanical exhaust ventilation system designed to contain and minimize employee exposure to hazardous vapors, fumes, and mists by way of negative pressure;
8. *Grounded:* a means of reducing the buildup of static electricity by providing a conductive path to the earth;
9. *Hazardous material/chemical:* a hazardous material or hazardous chemical is a substance that poses a viable risk to the health or well-being of an individual by way of its ability to burn (flammability), dissolve flesh or steel (corrosivity), result in deleterious health effects (toxic), or react with other chemicals in a manner that produces another hazard (reactivity); chemicals may also be classified by their known or suspected ability to cause cancer (carcinogen), impact the reproductive system (reproductive toxin), or impact a developing fetus (teratogen); the State of California and the Environmental Protection Agency also designate

specific chemicals as 'extremely hazardous' and the Federal government designates specific chemicals as 'acutely hazardous;'

10. *Hazardous Waste Manifest:* a document that is used to track the movement of hazardous waste from the originator of the waste (generator) to its final disposition location; the use of a Manifest does not absolve the generator of responsibility of the waste but is used to confirm the waste was delivered to an appropriate facility that, by permit and construction, is able to receive hazardous waste;
11. *Hazardous waste:* a material that no longer serves a purpose to the Facility or College and has certain characteristics that are harmful to people or the environment; chemicals that are no longer useable for their original intended purpose or are no longer useful to the possessor; unused chemicals that are not wanted by the possessor are considered waste;
12. *Sash:* an integral feature of a fume hood; a moveable partition designed to increase or decrease the accessible area of a fume hood's face which also results in modifying the velocity if in-flowing air;
13. *Table-top hoods*: ventilated enclosures that are designed to remove noxious odors from employee and student work areas; used to hold small amounts of no to low-toxicity chemicals; do not provide any fire or explosion resistance; are not outfitted with sashes; for the purposes of this *Program*, they are not considered fume hoods;
14. *Universal wastes:* waste that is widely produced by households and by businesses; the wastes are considered hazardous, but due to the prevalence in non-industrial businesses and homes, are handled in a different manner than hazardous waste;

VI. CHEMICAL HYGIENE OFFICER

San Diego Mesa College designates the following as Chemical Hygiene Officer:

- Occupational, Environmental Health and Safety Coordinator

The Chemical Hygiene Officer shall report to the VPA by way of the Safety Committee or other chosen method.

A. Responsibilities

The CHO will act as the point-contact for chemical health and safety concerns at San Diego Mesa College. The CHO shall be responsible for:

1. Overseeing the implementation of the relevant portions of the *Chemical Hygiene Program* in concert with administration, the Site Safety Committee, and Departments covered by this *Program*
2. Ensuring laboratory and waste container inspections as noted in this *Program* are conducted as required
3. Coordinating with the Facilities Services Department and other personnel, as applicable, to ensure that eyewashes, safety showers, fire extinguishers, and fume hoods are functional, appropriate, and checked as outlined in this *Program*
4. Evaluating the appropriateness of available chemical protective equipment
5. Coordinating or assisting in the proper and safe removal of hazardous waste from San Diego Mesa College
6. Acting as a resource for the Safety Committee and relevant Departments in matters relating to hazardous waste and hazardous material safety
7. Maintaining knowledge concerning the hazards presented by the substances present in their areas of responsibility

8. Facilitating communication between the Departments governed by this *Program*, the Risk Management Office, and the Safety Committee
9. Participating in the annual review of the *Chemical Hygiene Plan,* in conjunction with the OEHS Coordinator, Risk Management, the Safety Committee, and affected employees
10. Reviewing or assisting with investigating all incidents involving hazardous material and hazardous waste spills, releases, and exposures.
11. Conducting or coordinating relevant training associated with this *Program*.

B. Knowledge and Skills

The following knowledge and skills are set forth as suggested criteria in selecting appropriate personnel to act as Chemical Hygiene Officer.

1. San Diego Mesa College Chemical Hygiene Officer:
    a. Is not required to have a science degree; however, they must be qualified by training or experience. A science background or experience with hazardous waste handling would be beneficial
    b. Will review and be responsible for the information contained in all the references noted in Section II of this *Program*
    c. Will be familiar with this *Program* and all associated programs referenced herein
    d. Have appropriate training or experience to provide competent technical guidance for the *Chemical Hygiene Program's* development and implementation.

VII. CONTROL MEASURES

The control of the exposure, release, and spread of hazardous materials and waste is accomplished by the integration of engineering controls, administrative controls, and personal protective equipment.

A. Engineering Controls

1. Fume hoods (8 CCR 5143, 8 CCR 5154.1, 8 CCR 5191)

Fume hoods are commonly located in chemistry and biology instructional laboratories; however, other locations may incorporate fume-style hoods for the storage and handling of hazardous materials. Biological safety cabinets are different from fume hoods as they lack the construction and safety features of chemical fume hoods.

    a. Table-top hoods located in chemistry instructional laboratories can be used for small quantities (<1 L) of non- to low-toxicity substances and are not subject to the provisions of this section.
        1) As they lack gauges, the functionality of table-top hoods shall be demonstrated by affixing of a light-weight tape or other material to qualitatively demonstrate the negative pressure.
    b. Fume hoods shall be used when handling volatile chemicals or hazardous materials with low occupational exposure limits (<200 ppm or <50 mg/kg, time-weighted average (24 CCR, Part 9)).
    c. Fume hoods shall be used when consolidating hazardous waste.
    d. The fume hoods shall remain running whenever hazardous materials are present in the hoods unless maintenance is being performed on any portion of the system

1) When maintenance is being performed, all containers shall be securely capped or removed to prevent the escape of vapors and exposure of maintenance personnel.

e. The fume hoods shall maintain an average face velocity of at least 100 fpm.
    1) If the hood falls below 80 fpm or the alarm actuates with audible alarm or blinks red, all work in the hood is to be immediately stopped, all hazardous materials and waste shall be removed from the hood, and the hood shall be labeled "Do Not Use" with date, initials, and reason for removal. Maintenance should be contacted to evaluate the hood.
    2) No point of the fume hood face may measure less than 70 fpm.
f. Fume hoods are checked annually by a qualified person.
    1) The 'qualified person' may be an external contractor or an employee who has undergone a level of training regarding the process, use of the testing instrumentation, and generation of a report.
    2) Labels with inspection date and sash opening height shall be affixed to the fume hood where they are readily seen by users.
    3) Qualitative assessment of the hoods' ability to draw air by way of a tracer gas or other visualization test shall be performed on an annual basis.
        a) The frequency of the tests may be reduced to every two years if a calibration and maintenance program is in place for the quantitative airflow monitor or alarm system.
    4) The face velocity at which the alarm actuates shall also be determined using a one-point, center of hood face reading.
        a) The alarm should actuate at or below 80 fpm.
            i. If the alarm does not actuate, the hood shall be removed from service, the Regional Facilities Officer shall be notified, RESPONSIBLE PARTY AT DEPARTMENT LEVEL shall be notified, and the hood shall be labeled "Do Not Use" with date, initials, and reason for removal from service.
            ii. The alarm shall be serviced as soon as possible.
            iii. Re-testing shall be performed prior to the hood being put back into service.
    5) Records of fume hood checks are kept by the Laboratory Supervisor for no less than five (5) years (Title 8, section 5143 (a)(5)).
g. When hazardous materials are present in the fume hood, the sash shall not be raised above the designated height, except when needed to safely handle materials for a short period of time.
h. The sash may be lower than the designated height but may not be fully closed at any time~~,~~ unless the unit is off, and all hazardous materials have been removed.
i. Baffles and vents shall not be blocked by equipment or containers and obstructions should be minimized
j. Hoods are equipped with audible and visual alarms that actuate when the face velocity decreases to 80 fpm or below.
    1) If the alarm sounds and the sash is at the designated height, work in the hood shall be immediately stopped, the supervisor notified, the hood marked with a sign, and Facilities notified immediately to correct the problem.
        a) This shall also apply in the event of a power failure.
    2) The posted sign shall read "Do Not Use" and be marked with the date of posting, reason for posting, and individual posting sign.

3) All hazardous materials within the hood shall be properly capped or moved to another hood.

k. Employees and students must not place their head inside of fume hood while hazardous materials are present.
l. Any required maintenance or adjustments are performed by Facilities Maintenance or an outside contractor.
m. Chemicals shall not be permanently stored in instructional laboratory fume hoods.
    1) Only chemicals that are being actively used shall be placed in hoods.
    2) Exception- hazardous waste receiving containers may be stored in the fume hoods.
        a) These containers must be capped with appropriate lids when waste is not being put into them.
            i. If funnels are used to add waste, the funnel can be left in place if it has an appropriate cap or lid and an interface that hinders the escape of vapors.

2. Chemical Storage Cabinets (8 CCR 5164, 8 CCR 5533, Cal Fire Code 5001 and 5003)

Hazardous chemicals should be stored in specially designed cabinets in chemical storerooms or in hazardous waste accumulation areas. These cabinets must:

a. Be made of materials compatible with the chemicals stored within
b. Be properly rated for the chemicals they contain, such as fire resistance
c. Be inspected at least annually for signs of corrosion or damage
    1) Records of inspections shall be kept for three (3) years.
d. Be properly vented if they store volatile organic or volatile corrosive materials and the exhaust ventilation system can accommodate it.
    1) Flammable cabinet venting shall be metal.
    2) Corrosive cabinet venting shall be plastic.
e. Be outfitted with secondary containment for corrosives, such as plastic pans.
f. Be properly secured to the structure
g. Flammable storage cabinets shall not contain more than 120 gallons (454.24 L) of Category 1, 2, 3 and 4 flammable liquids. Of this total, not more than 60 gallons may be of Category 1, 2 and 3 flammable liquids. Only three (3) flammable cabinets per area, unless separated by one hundred (100) feet (Title 8, section 5533 (a))
h. Allow for the proper segregation and separation of incompatible chemicals.
    1) Water reactive chemicals shall not be stored in the same cabinet or room as flammable or combustible liquids.
    2) Acids and bases shall be stored separately
    3) Oxidizing acids (e.g., nitric and perchloric) shall be segregated and separated from other acids.
i. Have doors that close and secure properly
j. Be located away from emergency access and egress areas such as hallways, stairwells, and doorways.

B. Administrative Controls

Administrative controls are policies and procedures designed to reduce employee and student exposure to hazardous chemicals. The use of standard operating procedures (SOP's), general laboratory guidelines, housekeeping, and chemical handling procedures are administrative

controls used by San Diego Mesa College to minimize and contain the release of any hazardous materials.

1. Standard Operating Procedures

    a. This program, combined with training, will act as the Standard Operating Procedures for those processes that involve chemical movement, storage, and waste handling.
    b. Individual Departments may write supplemental Standard Operating Procedures to delineate site-specific program compliance for their unique programs and hazards, but they must be at least as stringent with the contents of this section.
    c. For instructional laboratory applications, the supplemental Standard Operating Procedures will consist of written laboratory experiments.
        1) Each Faculty member that uses hazardous chemicals in an instructional laboratory setting shall set forth, in writing, the proper use, handling, and disposal of the chemicals and provide a copy to each student prior to the laboratory exercises.
        2) Any deviations by students must be previously approved by the faculty member responsible for the experiment.

2. General Chemical Safety Guidelines

    a. Personnel should not work with or transfer flammable or toxic hazardous materials alone.
        1) If staffing levels result in individuals working alone, the area where hazardous materials are stored, mixed, prepared, or used shall have a designated notification system (alarm or communication device) to alert personnel in the area of a potential emergency.
        2) The notification system should be constantly monitored by a campus authority cognizant of the alarm's purpose.
    b. Employees and students should wash their hands with soap and water prior to leaving the area where hazardous materials are used.
    c. Eating or drinking, including taking medication, using smokeless tobacco, and chewing gum, is not allowed in areas where chemicals are used or stored.
    d. Horseplay or practical jokes are prohibited.
    e. Running is not allowed in laboratories, stock rooms, or storage locations.
    f. Cosmetics or contact lenses shall not be applied in areas where chemicals are used or stored.
    g. Door handles shall not be touched with gloved hands if gloved hands have been working with hazardous chemicals.
    h. Chemicals shall not be smelled unless part of a monitored experiment.
    i. Chemicals shall not be tasted.
    j. Mouth pipetting is forbidden.
    k. All work with volatile chemicals shall be conducted in the fume hoods or other well-ventilated areas.
        1) The fume hood shall be operating, and the alarm system status should be green.
            a) If the alarm sounds or indicator light turns red, the hazardous chemical(s) in the hood will be immediately capped or covered and work will stop immediately.
        2) Work with small amounts (<500 mLs) of non-toxic chemicals may be

conducted outside of the hood.

l. Work with volatile irritants, such as ammonium hydroxide or acetic acid, shall be conducted in the fume hoods.
m. Any process that involves heating or evaporating hazardous chemicals shall be conducted in the fume hood.
n. Volatile chemicals shall not be placed in chemical fume hoods as a manner of disposal.
o. Areas where hazardous materials or waste are stored shall be secured from unauthorized access.
p. Unless the hazards can be properly assessed, mixtures will be handled as if their properties are consummate with the most hazardous component.
q. Chemicals, or chemicals that exceed current storage capacity, that require special handling or safety requirements shall not be ordered without the express approval of the Dean, Supervisor, or designee and the OEHS Coordinator to ensure that adequate controls are available and appropriate.
r. Waste receptacles shall be made available for disposable, "solid waste," items used in experiments, chemical sampling, chemical transfers, or materials used to clean up chemical drips and spills.
    1) The receptacles shall be labeled as hazardous waste.
    2) Solid waste hazardous chemicals shall not be placed in these receptacles but shall be placed in separate, properly labeled containers.
    3) The receptacles shall be subject to the same time limitations as other hazardous waste collection vessels.

3. Housekeeping

a. All doorways and walkways are to remain clear and free from obstructions.
b. The area around eyewashes and safety showers shall always remain clear of obstructions to a distance of at least twenty-four (24) inches.
c. The area around gas supply valves shall always remain clear of obstructions, items placed there on a "permanent" basis, to a distance of at least twenty-four (24) inches.
d. Glassware, not currently being used, shall not be left out on the laboratory tables or counters and should be stored in cabinets or on the drying racks.
e. Areas shall be kept clean and neat.
f. Procedures that are more likely to result in splashing or spilling of an extremely hazardous chemical, such as stirring, vortexing, or decanting, should be performed on disposable bench protectors or absorbent mats.
    1) Bench protectors and mats can be used until visibly soiled or, in instructional laboratories, after one day of classes.
    2) If material is spilled on the protector or mat, it shall be replaced as soon as possible and disposed of as hazardous waste.
g. Small drips or spills of chemicals shall be wiped up immediately using appropriate PPE and proper materials for the chemical.
    1) Materials used for cleaning spills shall be disposed of as hazardous waste.
    2) Spilled solid material shall be cleaned up immediately and disposed of as hazardous waste.
h. Any items used to weigh extremely hazardous chemicals, such as weigh boats or weigh papers, shall be disposed of as solid hazardous waste.
i. Disposable cuvettes, pipettes, pipette tips, and scoops that have been used with extremely hazardous chemicals shall be disposed of as hazardous waste.

j. Broken glass shall be disposed of in designated containers.
    1) Broken glass shall not be picked up by hand but shall be swept with a broom into a dustpan or picked up using tongs and disposed of in the designated container. Use separate containers for broken glassware that is contaminated with hazardous chemicals and those that are not contaminated.
    2) The entire container will be disposed of when approximately 3/4 full.
        a) The lid will be secured and sealed with tape. If the container contains contaminated glassware the entire container will be disposed of as hazardous waste. If the container contains non-contaminated glassware, it may be disposed of in the trash dumpsters.
    3) These receptacles can also be used for other types of solid, hazardous waste such as used gloves, pipettes, or test tubes.
k. Sharps, such as scalpel or razor blades, shall be disposed of in an appropriate rigid container.
    1) The sharps container shall be disposed of when approximately 3/4 full.
    2) The lid shall be secured and taped to the container prior to disposal.
    3) If the container contains non-contaminated items it may be disposed of in the trash dumpsters.

4. Chemical Handling

Chemical handling is the application of best practices to minimize the risk in using, moving, or transferring chemicals. The basis of safe chemical handling is being aware of what chemicals are present in the workplace and their associated hazards.

a. Chemical Inventory

    1) A chemical inventory shall be conducted at least annually, no later than January 31 of each calendar year, and retained by each Department and a copy sent to the OEHS Coordinator.
        a) Mesa College's chemical inventory format has been standardized and each department must use the standardized format when creating their chemical inventory.

        b) The chemical inventory must also be cross checked with documents that define the maximum allowable limits. Based on the floor level on which the chemicals are stored. You will find the document in the appendices.

b. Receiving Chemicals

    1) San Diego Mesa College will **not** accept "outside" donations of chemicals, either new or partially consumed.
        a) All chemicals will be purchased from vendors, manufacturers, or distributors.
    2) All chemicals shall have the date received, initials of person receiving, and the date the chemical was opened written on the label in permanent ink.
    3) For chemicals received or opened prior to the implementation of this program, stickers shall be placed on the container reading

"Received/opened prior to (date)" and initialed by the individual placing the sticker.

4) As applicable, expiration dates shall be written on the container label.

c. Chemical Labeling

1) Chemicals should be kept and stored in the container supplied by the manufacturer. In the event a chemical must be repackaged due to damage, the new container shall be compatible with the material and the label shall include all of the required elements.
2) Every original container label must contain the following:
    a) Product identifier
    b) Signal word
    c) Hazard statement(s)
    d) Pictogram(s)
    e) Precautionary statement(s)
    f) Name, address, and telephone number of the manufacturer or importer.
    g) Label must be legible, permanently displayed, and written in English.
3) Secondary Containers

    Secondary containers are containers used to supply smaller amounts of chemicals from bulk containers to more than one location, such as instructional laboratories or custodial closets.
    a) Secondary containers must be of similar material and quality to the original.
    b) Secondary containers must be labeled with
        i) The name of the chemical or common name, in English.
        ii) The concentration of the chemical shall also be noted, if appropriate.
        iii) Pictogram(s) and/or other applicable hazard warnings.
        iv) Date chemical was transferred into container.

d. Chemical Storage

1) Chemicals shall be stored in the appropriate storage location, separated and segregated from incompatible chemicals.
2) Chemicals shall not be stored at elevations more than six (6) feet from the floor.
3) Shelves holding chemicals shall have lips or other integral restraining devices to prevent chemicals from sliding off (24 CCR, Part 9, 5003.9.9).
    a) Cabinets specially designed for hazardous chemicals do not require lips.
4) Shelves holding chemicals and hazardous waste shall be braced and anchored.
5) Cabinets containing corrosives shall be clearly marked "Corrosives" and "Hazardous- keep fire away."
    a) Bases shall be stored below counter or waist level.
    b) Containers holding corrosive materials shall be stored in plastic secondary containment to contain leaks.

c) Volatile corrosives should be stored in properly vented wooden or plastic cabinets if the exhaust ventilation system can accommodate it.

6) Volatile non-flammable chemicals shall be stored in vented cabinets or may be stored in refrigerators or freezers.
   a) These refrigerators or freezers must be clearly marked as chemical storage.
   b) No food or drink shall be stored in these refrigerators or freezers.
8) Flammable chemicals shall be stored in flammable cabinets that meet either construction criteria below and other requirements stated:
   a) Metal cabinets should be constructed in the following manner. The bottom, top, door and sides of cabinet shall be at least No. 18 gage sheet iron and double walled with 1 1/2-inch air space. Joints shall be riveted, welded, or made tight by some equally effective means. The door shall be provided with a three-point lock, and the door sill shall be raised at least two inches above the bottom of the cabinet. (Title 8 section 5532.b.2)
   b) Wooden cabinets constructed in the following manner. The bottom, sides and top shall be constructed of an approved grade of plywood at least 1-inch in thickness, which shall not break down or delaminate under fire conditions. All joints shall be rabbeted and shall be fastened in two directions with flathead wood screws. When more than one door is used, there shall be a rabbeted overlap of not less than 1-inch. Hinges shall be mounted in such a manner as to not lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test. (Title 8 section 5532.b.2)
   c) Cabinets containing flammable chemicals or wastes shall be labeled in red letters “Flammable- Keep Fire Away.”
   d) Flammable cabinets should always remain closed at all times.
   e) Not more than 120 gallons (454.25 L) of Category 1,2,3 and 4 flammable liquids may be stored in a flammable storage cabinet (Title 8, section 5533(a))
      i. Of this total, not more than 60 gallons may be of Category 1, 2, and 3 flammable liquid (Title 8, section 5533(a)).
   f) Only three (3) cabinets are allowed to store flammable chemicals in each room (Title 8, section 5533(a)).
   g) Very volatile flammable chemicals (boiling points at or below 50° C should be stored in refrigerators or freezers.
      i. These refrigerators or freezers must be clearly marked as chemical storage.
      ii. These refrigerators or freezers must be labeled as containing flammable materials.
      iii. They must be explosion-proof and rated to contain flammable materials.
      iv. No food or drink shall be stored in these refrigerators or freezers.
9) All opaque cabinets and doors to chemical and hazardous waste storage areas shall be clearly marked as chemical storage and have an NFPA 704 hazard identification label affixed.
   a) Entries for each category shall represent the highest hazard class

present in the storage cabinet, locker, or area.
    b) Refer to the *Hazard Communication Program* for labeling guidance.
10) San Diego Mesa College does not currently stock any acutely hazardous materials above the regulatory threshold quantities.

e. Transporting Chemicals and Chemical Waste

1) Chemicals and waste containers shall be securely capped prior to transport.
2) Laboratory chemicals and chemical waste should not be transported between facilities by private vehicles
    a) Chemicals that are to be transported between campuses or for other District business must be coordinated with San Diego Mesa's OEHS Coordinator prior to moving chemicals.
    b) Laws and regulations restrict the volumes of chemicals that can be moved as "materials of trade" without requiring placarded vehicles (49 CFR 173.6).
3) A secondary means of containing chemicals and waste should be used when transporting, such as a poly bucket or cart.
4) If containers carrying more than 4 liters/1 gallon are to be transported, a cart, dolly, or other means should be used.
    a) Carts used to transport chemicals or waste must be capable of containing a complete failure of the largest container being transported (24 CCR, Part 9, 5003.10.3.4).
5) Hazardous chemicals and waste should not be moved via stairwells.
    a) Hazardous chemicals and waste shall be moved between floors by way of elevators.
    b) Hazardous chemicals and waste that are moved via elevator shall have a means of secondary containment.
    c) The maximum size container allowed to be moved in an elevator is twenty (20) liters (5.28 gallons) (24 CCR, Part 9, 5003.10.4.2).
    d) The maximum size container for Toxic and highly-toxic gases shall be limited to a container of a maximum water capacity of 1 pound (24 CCR, Part 9, 5003.10.4.3).
    e) Students and other employees shall be excluded from elevators while they are being used to move hazardous chemicals or waste (24 CCR, Part 9, 5003.10.4.1).
    f) Extreme caution shall be taken to not contaminate the elevator surfaces, including floor selector buttons, during transportation.
    g) If hazardous chemicals must be moved from higher than the second floor, a means must be implemented to prevent the elevator from going to or stopping at other floors (24 CCR, Part 9, 5003.10.4.4).
    h) Incompatible shall not be transported on the same cart or truck (24CCR, Part 9, 5003.10.3.6.).

f. Transferring Chemicals

1) Chemicals can be transferred from one container to another by way of pouring, pipetting, or non-mechanical pumps.
2) If flammable chemicals are to be transferred to or from plastic or metal

containers, this action should be done for 5-gallon containers or larger. (Per OSHA citing NFPA 77)

a) If neither of the containers is glass, the containers shall be electrically bonded to one another with a conductive strap.
b) Polymer or metal container(s) shall be appropriately grounded.

g. Compressed Gas Cylinders

1) Storage
   a) Areas containing compressed gas cylinders, except for lecture-size bottles, shall be marked "Compressed Gas"
   b) When not in use, including when empty, cylinder valves shall be fully closed with protective caps securely in place
   c) Cylinders shall not be stored indoors unless the area is properly ventilated.
   d) Cylinders shall not be stored under stairs or near emergency exits.
   e) Cylinders shall be stored upright at all times.
   f) If not stored in an engineered and secured rack, compressed gas cylinders shall be secured to a fixed object by no fewer than two restraints.
      i. One restraint shall be approximately 1/3 from the top.
      ii. The second restraint shall be approximately 1/3 from the bottom.
      iii. The restraints shall be of sufficient strength and be adequately tight to prevent the cylinder from falling over.
   g) Storage areas for cylinders shall be secured to prevent access by unauthorized individuals.
   h) Cylinders stored in exterior locations shall be protected from damage by vehicles using guard posts or other permanent means.
   i) Cylinders should not be stored on the ground to prevent corrosion.
   j) Corrosive gases stored outside must be at least twenty (20) feet away from buildings.
   k) Lecture-bottle cylinders can be stored in a fume hood, or other appropriate storage cabinet, and may be laid on their side.
   l) Cylinders shall not be stored in direct sunlight or near other sources of heating to prevent over-pressure hazards.
   m) Empty cylinders shall be clearly marked "Empty" and stored separately from full or in-use cylinders.
2) Moving
   a) Cylinders shall be moved using cylinder carts and shall not be rolled on their edges.
   b) Cylinders shall be capped while moving.
   c) Regulators shall be removed while moving.
   d) Cylinders shall be secured to the cart/dolly while moving.
3) Labeling
   a) The cylinder shall be clearly labeled as to its contents.
   b) The label shall not be removed.
   c) Cylinders shall be labeled "Full," "In Use," or "Empty" as appropriate.
      i. Labels shall be attached to cylinder caps, when in place. Otherwise, as in the case of manifolds, the label shall be

attached to the valve assembly.

4) Use
    a) Tools, such as wrenches, shall not be used to open or close valves unless the valve is designed as such.
    b) Valves shall be fully closed before attaching or removing regulators.
    c) Only properly fitting regulators rated for the gas and pressure shall be used.
    d) Regulators and hoses shall be wrench-tight to prevent leaking.
        i. Care should be taken to not overtighten connections which can damage the hoses and unions.
        ii. Unions should be checked with leak detection solutions prior to use.
    e) Lubricating greases shall never be used on valve assemblies or regulators.
    f) If cylinders are placed in gas cabinets, the cabinets must (24 CCR 5003.8.6.1)
        i. Be constructed of at least 12-gauge steel
        ii. Have self-closing access panels
        iii. Have self-closing doors
        iv. Be compatible with the gas it is intended to hold.
        v. Have a ventilation system that creates a negative pressure relative to the surrounding environment.
5) Acetylene tanks
    a) The maximum amount of acetylene that can be stored inside a building is 2500 ft^3.
    b) Copper tubing and fittings shall not be used for acetylene tank transfer lines.
    c) Acetylene tanks must be stored away from oxygen cylinders by more than twenty (20) feet of distance or with a five (5) foot high fire-resistant wall between them unless they are in use.
        i. The use of oxygen/acetylene carts is permitted in welding operations.
    d) Areas containing acetylene tanks must have a conspicuous ‘no smoking or open flame’ sign posted at all times.
    e) Do not open the valve without a regulator attachment to prevent potential expulsion of solvent.
6) Refrigerant gases
    a) Refrigerant gas cylinders shall be appropriately marked.
        i. Color-coded gray with yellow top
        ii. Labeled with a DOT-approved non-flammable gas label
        iii. Clearly labeled ‘refrigerant’ with the type of refrigerant, if known.
    b) Different refrigerants shall not be mixed in cylinders.
    c) Refrigerant gas cylinders shall be equipped with pressure release devices.
    d) Refrigerant gas cylinders shall not be stored in direct sunlight.
    e) Refillable cylinders shall not be filled more than eighty (80) percent full, sixty (60) percent in warm weather months.
    f) Filling or transferring refrigerant gases can present hazards
        i. Refrigerant shall only be transferred to or from cylinders in

well-ventilated areas.
   ii. Proper PPE shall be used to protect employees from the hazards associated with cryogenic gases including safety glasses and insulating gloves.
g) All transfer hoses and equipment shall be inspected prior to use for any cracks or signs of deterioration.
   i. Hoses, valves, and unions that are visibly deteriorated shall not be used and shall immediately be replaced.
h) Whenever cylinders are opened, the valve shall be positioned away from employees and surrounding personnel.
i) Dented, damaged, or visibly corroded cylinders shall not be refilled and should be removed from service for recycling.
   i. Cylinder contents shall be completely transferred prior to recycling or disposal.
j) Under no condition shall refrigerant cylinders be intentionally vented unless overpressure is an impending hazard.

7) Cylinder failure
   a) If a cylinder or valve assembly begins to leak or the valve cannot be closed
      i. For non-toxic, non-flammable, and non-corrosive gases, the cylinder shall be moved to an exterior location away from buildings or pedestrian walkways and allowed to vent. If the gas could be an asphyxiate, leave where it is at and evacuate immediate surroundings and push the red button to contact emergency dispatch.
      ii. For toxic, flammable, and corrosive gases, the incident shall be treated as an uncontrolled release- see "Emergency Response Procedures," in this document or refer to the *EAP Guide.*

C. Personal Protective Equipment

The last line of defense against chemical hazards is personal protective equipment (PPE) since any failure in the measure will likely result in an exposure. The following are San Diego Mesa College's guidelines for personal protective equipment while handling chemicals pursuant to California Code of Regulations, Title 8, Section 3380. For additional information, refer to the San Diego Mesa's *Personal Protective Equipment Program*. Students in instructional laboratories that use chemicals are expected to be informed of and adhere to the following guidelines.

There will be a process to exempt certain non-hazardous chemicals and processes from the minimum PPE or dress attire requirements outlined in this section. The hazard assessment process, or equivalent, will be used to allow for certain exemptions. The hazard assessment process can be found in the *Personal Protective Equipment Program*, refer to that program for details of the assessment. The hazard assessments will be conducted by the area Supervisor or their designee, and final attire or PPE modification must be approved by the campus OEHS Coordinator.

1. General Guidelines and Minimum Standards

a. Unless otherwise arranged for by the Department, students in instructional laboratories are responsible for providing their own, appropriate protective equipment.
    1) Faculty shall provide specific guidance regarding the type of PPE to be purchased by the student
    2) Faculty shall be responsible for enforcing the use of PPE in the instructional laboratories.
    3) Students with insufficient or inappropriate PPE, or attire, shall be immediately directed to wear the appropriate PPE. Failure to comply will result in the student's being removed from the instructional laboratory until such time they have the appropriate equipment.
    4) Minimum student PPE for instructional laboratories include:
        a. Chemical splash goggles.
        b. Laboratory coats.
        c. Appropriate chemical-resistant (non-latex) gloves.
        d. Close-toed and close-heeled shoes.
b. Shorts, pants that expose any skin, and skirts or dresses that come above the ankle may not be worn in laboratory areas or when handling chemicals. The area of skin between the pants and the shoe should not be exposed.
c. Tank tops, sleeveless shirts, or shirts that expose the chest shall not be worn when working with chemicals unless covered by a laboratory coat or other protective apparel.
d. Long hair shall be pulled back or worn up to prevent inadvertent contact with chemicals.
    1) Hair nets can be used.
e. Exceptions for PPE and attire minimums can be made, subject to a Hazards Assessment Process, or an equivalent process, and appropriate approvals for additional information, refer to the San Diego Mesa's *Personal Protective Equipment Program* for details.
f. San Diego Mesa College shall provide appropriate PPE for student workers and volunteers providing equivalent protection as that offered to employees.

2. <u>Gloves</u>

a. Each Department is responsible for providing employees with an adequate supply of glove types and sizes, based on the chemicals and processes used.
    1) Employees obtain gloves that are properly sized and appropriate for the chemicals they are using from their supervisor or, depending on Department policy, directly from an external vendor.
    2) Specialty gloves shall also be provided or ordered as required.
    3) Gloves shall be of adequate construction to provide protection against the chemicals and the processes they are being used for.
b. Gloves are not required to be worn when receiving chemical deliveries.
c. Gloves are required to be worn by any employee who opens, handles, transfers, pours, or otherwise uses hazardous chemicals of any amount, including toxic, corrosive, and refrigerant gases.
    1) This includes taking inventory or moving previously stored chemicals.
d. Gloves shall be worn when handling, or washing, used glassware, with hazardous or unknown contents
    1) Gloves with gauntlets that are longer than the wrist may be appropriate to reduce the chance of contaminated wash water entering the glove.

e. The Safety Data Sheet (SDS) or glove manufacturer websites can be consulted for the appropriate chemical protective glove for many chemicals.
    1) At a minimum, employees should be provided with nitrile gloves which are good protection against corrosives, poor protection against petrochemicals and oxygen-containing compounds.
        a) Different thicknesses of nitrile gloves are available
    2) Latex gloves will not be provided due to the potential for latex allergy and the material's lack of chemical protection.
f. Gloves should be inspected for defects prior to donning.
    1) If a defect is found, the glove is to be discarded and replaced.
g. Disposable gloves should be discarded:
    1) After they have become visibly contaminated,
    2) After they have become discolored,
    3) After use, or
    4) Before the employee or student leaves the laboratory or storage area.
h. Gloves with wrist length gauntlets shall not be immersed in chemicals or used for washing items with chemical solutions.
    1) Forearm or longer length gloves shall be used for this purpose with a larger mil thickness than typical gloves.
    2) These gloves are disposable, although they may be reused several times, and should be treated as solid hazardous waste.
        a) If they are to be reused, a change schedule or procedure to notify employees when they need to change gloves must be established.
    3) When gloves shall be immersed in solvents for any period of time, the employee should be aware of the permeation rate of the chemical they are using.
i. Gloves that have been used to handle hazardous chemicals shall be removed and disposed of before the employee contacts doors leading out of the area or other items that should remain uncontaminated.
j. Gloves shall not be worn outside of the area where chemicals are located.
k. Cryogenic gloves are to be used whenever an employee is transferring liquid nitrogen, working with solid carbon dioxide (dry ice), transferring refrigerant, or retrieving items from a freezer for an extended period of time.
    1) Cryogenic gloves are not chemical resistant and therefore will not be used for general chemical handling.

3. <u>Laboratory coats</u>

a. Laboratory coats shall be at least knee length.
b. Laboratory coats shall be worn by employees whenever they are working with hazardous chemicals or hazardous waste.
    1) The use of smocks in lieu of laboratory coats may be appropriate in some Departments.
c. Laboratory coats shall be inspected prior to each use for defects.
    1) Damaged or defective laboratory coats shall not be worn near chemicals and will need to be replaced or repaired immediately.
d. When working with chemicals, laboratory coats shall be worn with the sleeves long enough to protect exposed skin and under clothing. Lab coats should be properly buttoned.
e. Laboratory coats shall not be worn outside the laboratory or areas where chemicals are not present unless chemicals are being transported.

f. Laboratory coats shall be laundered on a regular basis or when
    1) They become visibly contaminated
        a) If a laboratory coat becomes contaminated with a chemical, it shall be separately packaged in a plastic bag, taped closed, labeled as 'contaminated' and placed in the laundry basket.
        b) If a laboratory coat becomes saturated or heavily contaminated with a chemical, it shall be disposed of as hazardous waste.
    2) They are visibly dirty
    3) At the employee's discretion.
g. Laboratory coats shall be worn when transferring or handling cryogenic liquids.
h. Laboratory coats are not required when handling, installing, or using gas cylinders.
i. Chemical resistant aprons should be worn over laboratory coats for specific tasks that have a high probability of splashing.

4. Shoes

a. All employees, students, and visitors shall wear close-toed and close-heeled shoes whenever they are handling or transferring chemicals or waste.
    1) Flip flops, clogs, or other sandal-type shoes shall not be worn when working with chemicals.
b. Shoes shall cover the entire foot and not be made of woven or perforated materials.

5. Eye Protection

a. Chemical safety splash-resistant goggles shall be worn at all times by faculty, employees, and students when hazardous chemicals are being used and there is a possible risk of a chemical splash.
b. Safety glasses can be worn by faculty and employees in lieu of splash goggles when no splash hazards exist. For example, safety glasses may be worn in the following situations: (However, splash goggles are highly recommended as they will provide greater protection from chemical exposure)
    1. An individual is walking through a chemical use area, but is not using or directly standing next to someone using hazardous chemicals.
    2. Working with solid materials (and not making solutions)
    3. Conducting flame tests.
    4. Using impregnated chemicals.
    5. Using small dropping bottles (30ml or less) and dispensing the chemical with a dropper.
    6. Doing animal dissections.
c. All goggles shall be ANSI Z87.1 certified and be clear, not tinted.
    1) Tinted goggles or safety glasses are allowed only when using radiation sources requiring shielding.
d. Goggles should be indirectly vented to prevent fogging.
e. Prescription glasses are not considered safety glasses and cannot be worn without supplemental splash protection.
    1) Eyeglasses may be worn under safety goggles only if the goggles are designed to accommodate the temple pieces.
    2) Contact lenses may be worn under goggles.
f. Employees and faculty may obtain their goggles from their supervisor or,

depending on Department policy, directly from an external vendor.

1) Employees who require prescription lenses may coordinate with their supervisor regarding prescription goggles or other splash protective eyewear.
2) Damaged or severely scratched goggles should be replaced immediately.

VIII. HAZARDOUS WASTE

San Diego Mesa College generates both liquid and solid hazardous waste. The waste is retained for short periods until it is collected and transported by a hazardous waste contractor for treatment or disposal at an appropriately licensed facility. Waste can include chemicals or products that have not been used, but are no longer needed. The waste must be removed from the site, by the waste hauler, before the 90th day from the listed start date on the individual container. Hazardous waste includes chemicals, used oil, pesticides, and paint.

A. Chemical Waste

1. The waste in the storage area shall be segregated and separated by hazard class and placed into containers that are no larger than 5 Gallons.
    a. Waste shall be separated into at least the following hazard classes in separate containers:
        1) Ignitable (22 CCR 66261.21)
            a) Liquid with a flash point less than 60 C/140 F
            b) Friction sensitive solids
            c) Spontaneously combustible chemicals
            d) Oxidizer (chlorate, permanganate, inorganic peroxide, nitrate, hydrogen peroxide derivatives)
        2) Corrosive (22 CCR 66261.22)
            a) pH less than or equal to 2
            b) pH more than or equal to 12.5
            c) Solids that when mixed with water form solutions equivalent to (a) or (b)
        3) Reactive (22 CCR 66261.23)
            a) Water reactive
            b) Inorganic cyanide or sulfide waste
            c) Capable of detonation or explosion if initiated or heated
            d) Air reactive
        4) Toxic (22 CCR 66261.24)
            1) Specific substances listed in the standard
            2) Oral LD_{50} < 2,500 mg/kg
            3) Dermal LD_{50} <4,300 mg/kg
            4) Inhalation LC_{50} <10,000 ppm
            5) Carcinogens- Refer to Proposition 65 list
            6) Solid waste.
        5) Other waste categories may be designated by the Departments as appropriate.
2. Separate containers shall be used for solid waste, each liquid waste category, and containerized waste for each hazard class (22 CCR 66262).
    a. ‘Containerized’ waste refers to waste in small containers that are placed in a larger container.

        1) Both container and chemical are waste.
3. Waste of similar hazard classification may be consolidated into larger containers.
    a. 'Consolidation' refers to the practice of emptying smaller containers into a larger container to combine liquid or solid wastes into a single container.
        1) Only the chemical is waste, container is retained for reuse.
4. Only compatible wastes can be placed in the same container.
5. Waste from different Departments shall not be consolidated.
6. Aqueous and organic wastes of the same hazard class shall be placed in separate waste containers.

B. Special Waste Classes

There are specific classes or types of hazardous waste that have additional labeling, packaging, handling, or storage requirements. The mandatory requirements and definition of classes are found in Appendix B for the following classes of waste

1. Liquid paint
    a. Unused liquid paint shall be managed either by recycling or handling as hazardous waste.
2. Dry paint
3. Used oil
    a. Used oil shall be managed either by recycling or handling as hazardous waste
4. Used oil filters
    a. Used oil filters shall be managed either by recycling or handling as hazardous waste
5. Empty chemical or hazardous waste containers
6. Aerosol cans
7. Pesticides

C. Chemical Waste Containers

Waste shall be collected in containers that contain the waste and any vapors generated to prevent any exposure of the environment or employees to the contents. The following requirements apply to all waste containers.

1. Containers shall be compatible with the material they are designated to contain (22 CCR 66265.172).
    a. Containers that are to be disposed of with the waste ('lab packed') must be (49 CFR 173.12(b)(2)(i)):
        1) One (1) gallon or smaller for glass containers
        2) Less than 5.3 gallons for plastic (20 L)
        3) Have secure, tight-fitting lids, preferably threaded, that do not react or degrade with the waste class within.
2. Containers shall prevent the leakage of liquid or solid materials.
    a. If containers show visible signs of degradation or begin to leak,
        1) The contents shall be completely transferred to another container.
        2) The 'new' container shall inherit the accumulation start date of the waste.
        3) The compromised container shall be disposed of properly.
3. All containers shall have appropriate lids that close securely.
    a. Lids are to remain in place unless waste is actively being added or removed from

the container.
   b. Lids shall prevent the intrusion of rainwater or other materials.
   c. Lids shall be secure enough to prevent spillage of contents if the container is knocked over.
   d. Lids shall not be adversely affected by the materials they come into contact with.
4. Funnels can be used to facilitate adding waste to the containers.
   a. Funnels shall be
      1) Attached to the container in a method that reduces vapor escape, and
      2) Self-closing or having lids that attach securely when waste is not being added.
   b. Funnels may be reused until they show signs of deterioration and are used with compatible wastes only.
   c. Funnels may be cleaned by rinsing with an appropriate solvent into the waste container while the container is in an appropriately ventilated area.
   d. Physical blockages shall be removed using all appropriate personal protective equipment in an appropriately ventilated area.
5. Containers shall be clearly, visibly, and legibly labeled "Hazardous Waste."
   a. All waste containers shall have yellow hazardous waste stickers with red lettering.
   b. Labels shall be at least four inches in dimension on all sides.
   c. Labels shall be durably affixed to the container.
   d. The following information shall be clearly and legibly entered on the label in blue or black ink:
      1) EPA ID number
         a) San Diego Mesa College HAS a unique EPA identification number obtained from the State.
         b) San Diego Mesa College HAS only one (1) EPA identification number to be used for tracking all waste.
         c) The OEHS Coordinator is responsible for obtaining and maintaining the EPA ID number.
      2) Street address of Mesa College: 7250 Mesa College Dr. San Diego CA. 92111
      3) Contact phone number: This phone number should be from the area/Department generating the waste
      4) Hazard class of waste. (Refer to Section VIII.A.1-5)
      5) Physical form of waste
      6) Date the first waste was placed into the container
   e. Information on the labels shall be protected from chemical exposure.
      1) Labels can be placed in plastic protective covers that are permanently affixed to the container.
      2) Labels can be covered with clear tape after the information has been written on the label.
6. Unused portions of chemicals can be disposed of in their original containers as long as the container is properly labeled as hazardous waste.

D. Chemical Waste Storage Facilities (8 CCR 5534, 22 CCR 66261, 22 CCR 66262, 40 CFR 262.34)

1. Point of Generation Accumulation Areas

a. Accumulation areas shall
    (a) Be locked to prevent unauthorized access
    (b) Be labeled on the exterior as containing hazardous waste
    (c) Be marked with an NFPA 704 hazard warning label
    (d) Have adequate ventilation or be equipped with chemical fume hoods
    (e) Have adequate and appropriate storage for hazardous waste containers
    (f) Have containers placed in or on a means of secondary containment in the event of spills or leaks.
b. Waste of similar hazard classification may be consolidated into larger containers only if the exact composition is known and compatibility has been assessed by a competent person.
    1) In this instance, a competent person is a person with knowledge of the chemical and physical properties of all substances to be combined as well as any potential reactions that may occur or products that may be formed during mixing including, but not limited to, the generation of heat, the production of toxic by-products, oxidative reactions, and auto-ignition.
    2) Chemicals with the following properties will not be consolidated or combined with any other chemicals; however, residual amounts of the same chemical can be combined into a single container
        a) Pyrophoric
        b) Water reactive
        c) Organic peroxides
        d) Self-reactive
        e) Flammable solids.
    3) The accumulation start date is the date the waste was originally placed into its first container, not when it was consolidated.
    4) Consolidation is only allowed in areas that are properly ventilated or in chemical fume hoods.
c. Wastes shall not be treated, neutralized, or intentionally mixed in an attempt to render the waste less- or non-hazardous.
d. Waste containers shall be removed from the classrooms when the containers are approximately ¾ full.
e. Waste containers within individual laboratories shall not exceed 5.28 gallons (20 L) in size
f. Instructional laboratories that contain waste shall be locked or otherwise have access restricted when class is not in session; otherwise, the waste containers shall be removed.

2. <u>Dedicated Hazardous Waste Storage Area (bunker): (If used onsite)</u>

A hazardous waste storage area where hazardous waste is consolidated and stored while awaiting disposal is located in ROOM OR LOCATION. (San Diego Mesa College does **not** currently use a bunker for storage)

a. The storage area shall
    1) Be secured from unauthorized employee and student access
    2) Be located in an area away from pedestrian or vehicle traffic, if possible
    3) Be constructed of fire-retardant materials having a fire rating of at least two (2) hours
    4) Protect the waste containers from rain and direct sunlight
    5) Have adequate ventilation, either gravity or mechanical, no more than

twelve (12) inches off the ground which provides at least 6 air exchanges per hour (8 CCR 5534)
    a) Mechanical systems shall have a switch located outside of the facility.
    b) For gravity systems, a supply vent must also be provided.
6) Have a chemical fume hood with separate ventilation if waste consolidation is to take place
7) Have secondary drainage systems or containment systems to prevent the migration of spilled or leaking chemicals
    a) Outside storage facilities shall be surrounded by curbs at least twelve (12) inches in height or graded to prevent spills from draining toward buildings, sanitary sewer systems, or sources of surface water.
    b) If curbed, the basin must have a means to handle rainwater.
10) Have intrinsically safe lighting with external switches
11) Be outfitted with an automatic fire protection system appropriate for the waste categories stored within or have an alarm actuation device
    a) If the alarm is not connected to external emergency responders, then the facility shall be outfitted with a communication device
12) Be equipped with a spill kit
13) Have decontamination equipment external to the storage facility, such as an emergency shower and eyewash, to allow exposed employees to reach such equipment within ten (10) seconds
14) Have an external fire extinguisher no more than ten (10) feet away
15) Have interior aisles of at least three (3) feet
16) Be externally labeled with
    a) NFPA 704 hazard warning sign
    b) Sign noting presence of hazardous waste
    c) No smoking sign (25-foot limit)

b. Containers may be placed on secondary containment systems.
    1) Secondary containment is required for outdoor storage areas.
    2) Secondary containment systems can be an integral part of the facility.
c. Incompatible wastes shall be separated by at least three (3) feet or a physical barrier (e.g., separate containment skids).
d. Hazardous waste containers in the storage area shall be inspected weekly.
    1) Containers shall be inspected for damage, corrosion, leaking, or waste past the allowable accumulation time limits.
    2) A record of the inspection shall contain
        a) Name of inspector
        b) Date of inspection
        c) Notation of any damaged or corroding containers as well as corrective action
        d) Notation of any waste past accumulation time limits as well as corrective action
    3) San Diego County Hazardous Materials Division provides a *Hazardous Waste Storage Inspection Checklist* that can be used. Refer to Appendix A for a copy.
e. San Diego Mesa College generates more than 1000 kg of waste per month or more than one (1) kg of acutely or extremely hazardous waste (Large Quantity Generator), the waste shall be removed at least every 90 days.
        a) San Diego Mesa College, as a Large Quantity Generator, must also

i. Have a Federal, not State, EPA ID number
ii. Prepare and retain an emergency response plan for chemical incidents
iii. Assign an emergency coordinator to respond to spills and initiate emergency responses, as necessary
iv. Train the employees who generate, package, consolidate, transport, or otherwise handle the waste in spill response procedures.

f. Waste shall only be transported by certified hazardous waste contractors.
    1) Waste may be moved between buildings if properly transported.
        a) Refer to V.B.4.e of this *Program* for guidelines on transporting chemical waste.
    2) Waste may not be moved between buildings if the waste must cross municipal roadways.
g. Emergency notification information shall be posted at the entrance to all hazardous waste storage areas and near at least one (1) telephone in the immediate vicinity of the storage location with the following information
    1) San Diego Mesa College emergency coordinator, responsible 24-hours for chemical spill responses
    2) Administrator responsible for the area containing the storage area
    3) College Police Dispatch
    4) 911
    5) Location of
        a) Fire extinguisher
        b) Fire alarm
        c) Spill kit.

E. Hazardous Waste Profiles

Hazardous waste profiles are records that delineate the content and associated hazard characteristics of a particular waste stream.

1. Each Department that generates hazardous waste, can create and will maintain their departments waste profiles with the contracted hauler. If needed the Campus Chemical Hygiene Officer can assist department personnel with their profiles.
    a. San Diego Mesa College determines profiles by way of knowledge of hazardous chemical inputs into the waste streams.
2. Hazardous waste profiles must accurately reflect the waste in any particular container.
3. Profiles should be reviewed by the Occupational Environmental Health and Safety Coordinator.
4. Profiles may be reviewed by the hazardous waste contractor.
5. Profiles must be updated annually or whenever there is a change before the waste can be removed from the College.
6. Profiles must be kept by the College indefinitely.

F. Hazardous Waste Manifest

A manifest is a tracking document that is used to identify the owner of hazardous wastes throughout the transportation and disposal process (49 CFR 172.204).

1. A *Uniform Hazardous Waste Manifest* must be filled out prior to shipment.
    a. If San Diego Mesa College has entered into an 'authorized representative' agreement with a hazardous waste contractor, the then contractor will complete and sign the manifest for the college.
        1) If no agreement is in place, then San Diego Mesa College is responsible for accurately and correctly completing the manifest.
    b. The Manifest should be signed by a San Diego Mesa College representative, preferably the appointed department hazardous waste lead, or by the OEHS Coordinator or the Campus Chemical Hygiene Officer
        1) The campus representative must receive US Department of Transportation or Title 22 training before they can sign a manifest (49 CFR 172.704).
            a) Refresher training must be completed every three (3) years.
    c. The campus representative will receive a copy by the transporter.
        1) This copy must be retained for at least three (3) years.
        2) A copy of this manifest must be sent within thirty (30) days of shipment, to: DTSC Generator Manifests, Department of Toxic Substances Control, P.O. Box 400, Sacramento, CA 95812-0400.
        3) An additional copy must be forwarded to the Campus OEHS Coordinator.
    d. A final copy will be sent or available to San Diego Mesa College upon receipt at the final waste handling destination.
        1) The Campus OEHS Coordinator must obtain a copy of the final manifest, signed by the destination facility, within thirty-five (35) days of shipping the waste.
        2) If a copy is not obtained within thirty-five (35) days of shipping the waste, the Campus OEHS Coordinator must contact the destination facility and the disposal company to determine the status of the shipment.
        3) If San Diego Mesa College does not receive a copy of the signed manifest, the Campus OEHS Coordinator must file an *Exception Report* with the Department of Toxic Substances Control.
            a) Large quantity generators have forty-five (45) days to file a Report.
            b) Small quantity generators have sixty (60) days to file a Report.
    e. The manifests signed by the TSDF must be kept for three (3) years.
    f. A copy of the final signed Manifest must be mailed to the California Department of Toxic Substances Control within thirty (30) days of the waste pickup.
        1) The Campus Chemical Hygiene Officer must verify whether this is performed by the TSDF or if they are responsible for forwarding a copy to the State.
    g. It is recommended that the *Manifest* copy offered by the transporter and the final copy signed by the TSDF, as well as any *Exception Reports*, be retained no less than thirty (30) years to indemnify San Diego Mesa College and the District against any future remediation actions.
2. The Campus OEHS Coordinator or their designee is responsible for retaining all copies of the signed manifests.

G. Biennial Reports (22 CCR 66262.41)

Biennial reports of hazardous waste activities are required to be submitted by the Chemical Hygiene Officer before March 1 of each even year. This report will be the responsibility of the OEHS Coordinator.

1. The information required includes

a. EPA id number, College name, and address of San Diego Mesa College
b. Calendar year covered by report
c. ID number, name, and address of all TSDFs waste was sent to for the time covered by the report
d. Description, EPA hazardous waste number, California Hazardous Waste Category Number, DOT Hazard Class, and quantity for each hazardous waste shipped offsite.
    1) Refer to Appendix C, *Hazardous Waste Categories for Biennial Report*
e. Description of efforts taken to reduce volume and toxicity of waste generated
f. Description of changes in volume and toxicity actually achieved compared to previous years
g. Signature of Chemical Hygiene Officer certifying report.

IX. UNIVERSAL WASTE

Universal wastes (UW) are hazardous wastes of specific categories that are exempt from hazardous waste management requirements; however, as they do pose some hazard to health and the environment, they must be disposed of properly. In regards to universal waste regulations, the term 'handler' is synonymous with 'generator.' The OEHS Coordinator or Chemical Hygiene Officer is responsible for implementation and oversight of this section.

A. Universal Wastes

The following are classes of universal waste (22 CCR 66261.9):

1. Batteries, used and discarded (excluding lead acid vehicle batteries)
2. Electronic devices, used and discarded, such as computers, A/V equipment, cell phones, and monitors (excluding devices to be recycled)
3. Mercury-containing equipment such as thermostats, mercury-containing switches, pressure gauges, mercury thermometers, and gas flow regulators
4. Light bulbs, including but not limited to fluorescent, high-intensity discharge, neon, mercury vapor, sodium, and metal halide
5. Cathode ray tubes and tube glass from older monitors or televisions
6. Non-empty aerosol cans.

B. General Requirements

1. San Diego Mesa College will not accept UW from households or other businesses.
2. For the purposes of UW,
    a. A small quantity generator accumulates less than five thousand kilograms (5000 kg) of total UW at any time.
    b. A large quantity generator accumulates more than five thousand kilograms (5000 kg) of total UW at any one time.
3. Containers for UW shall
    a. Be constructed of materials to prevent the breakage or damage to the UW contained within.
    b. Have lids that
        1) Are appropriate for the container
        2) Remain in place unless waste is actively being added or removed
        3) Protect the contents from rainwater or other contaminating material.
    c. Be clearly and legibly marked "Universal Waste" and identify the waste they are

to contain (e.g., 'fluorescent bulbs,' 'batteries,' 'mercury thermometers,' etc.).
   d. Have labels of a different color than hazardous waste labels used at the Facility or College.
   e. Be clearly and legibly marked with the accumulation start date.
4. If San Diego Mesa College collects mercury-containing implements for disposal, a mercury spill kit must be near the waste container.
   a. Employees must receive training specific to cleaning up mercury spills.
5. UW must be removed from San Diego Mesa College within one (1) year of the accumulation start date.
   a. Waste may be removed by
      1) A licensed Universal Waste Hauler/Handler
      2) A recycling facility
      3) District personnel transporting UW to an appropriate recycling or disposal facility
      4) A hazardous waste contractor.
6. Records
   a. Records of UW may be in the form of a Manifest, a Bill of Lading, an invoice, or a receipt.
      1) If transported by a hazardous materials transporter, UW may be included on the *Manifest* with other waste streams.
   b. UW records must include
      1) Waste type/class
      2) Date waste was removed
      3) Name, address, and phone number of handler removing waste
      4) Reasonable estimate of amount of waste removed
      5) Destination facility name, address, and phone number.
   c. UW records must be retained by the OEHS Coordinator or Chemical Hygiene Officer for at least three (3) years.
7. Departments or buildings may have separate waste containers as long as they meet the above requirements and are removed or emptied in a timely manner.
   a. Every container must be marked with an accumulation start date to facilitate timely removal.
   b. A representative of the Department must coordinate timely removal and disposal with the Chemical Hygiene Officer.

C. Specific Universal Waste Requirements

1. Batteries

   a. Batteries must be removed from electronic devices as they are separate waste streams.
   b. Alkaline batteries larger than 9 V (in terms of voltage), Nickel-Cadmium (Ni-Cd), and rechargeable batteries must have masking or other heavy-duty tape applied over the positive pole prior to placing in the container.
   c. Containers holding used batteries shall be clearly and legibly labeled "Batteries."
      1) If San Diego Mesa College is disposing of rechargeable batteries and alkaline batteries, two separate waste containers must be used:
         a) "Used batteries- alkaline"
         b) "Used batteries- rechargeable"

2. Light Bulbs

    a. Containers for used light bulbs must provide adequate protection to prevent damage to the bulbs.
    b. Containers holding used light bulbs shall be clearly and legibly labeled "Waste Bulbs."
    c. Particularly for fluorescent bulbs, containers must be sized appropriately to ensure the lid can be affixed properly to protect the used bulbs.
    d. To dispose light bulbs, contact the OEHS Coordinator or the facilities department.

3. Aerosol Cans

    a. Aerosol cans that are handled as Universal Waste when:
        1) The can is partially full but cannot be used due to defective spray mechanisms
        2) The propellant has been spent, but product still remains
        3) The product is no longer needed.
    b. San Diego Mesa College will not process (puncture, drain, or crush) aerosol cans (Health and Safety Code 25201.16(2)).
    c. Empty aerosol cans, devoid of product and propellant, can be recycled.
        1) Intentionally discharging an aerosol can solely for the purposes of rendering it non-hazardous is considered a hazardous materials release and is strictly forbidden.
        2) Piercing or otherwise compromising the can in an effort to release residual product or propellant is strictly forbidden.
    d. Containers holding used or waste aerosol cans shall be clearly and legibly labeled "Waste Aerosol Cans."
    e. If not covered after cans are added, the lid must be secured at the end of each workday.
    f. The container must be stored in an area with adequate ventilation.
    g. The container must be stored away from any heat sources, including direct sunlight.
    h. To dispose of aerosol cans, contact the OEHS Coordinator or the facilities department.

4. Electronic Devices

    a. Electronic devices to be disposed of do not need to be placed in a container.
        1) Waste devices can be disposed of by contacting the stockroom.
    b. Each device must be marked with the date it was determined to be a waste.
    c. Devices must be removed from San Diego Mesa College no more than one (1) year after the date marked on the device.

X. EMERGENCY EQUIPMENT

A. Eyewashes and Safety Showers (ANSI 2358.1.2014, 8 CCR 5162).

Emergency eyewashes and safety showers are required in areas where employees routinely use corrosive, irritant, or skin absorbing chemicals. Such areas include, but are not limited to, science department instructional laboratories and preparation rooms and hazardous waste storage areas.

1. Eyewashes and safety showers shall be clearly identified with signage visible from at least twenty (20) feet away.
2. Eyewashes and showers must be accessible within ten (10) seconds or 50 feet of any area where hazardous chemicals or waste are used or stored.
    a. In the event that shower and eyewash units are not operational within a 10-second travel time from an area where hazardous chemicals are being used or stored, all operations with hazardous chemicals shall be immediately suspended until the units are made functional by the Facilities Services Department.
        1) The use of chemicals by students is forbidden in instructional laboratories if nearby safety showers and eyewashes are non-functional.
3. Safety shower handles must be no more than sixty-nine (69) inches from the floor.
    a. Extensions to the handle may be added for employees or students in wheelchairs.
4. Eyewashes shall be located between thirty-three (33) and fifty-three (53) inches from the floor.
5. Eyewashes must have protective caps over the spouts to prevent contamination.
    a. The caps must remain in place except during testing and use.
    b. Water pressure should be sufficient to remove caps during actuation.
6. The areas around eyewashes and safety showers must be clear of debris and obstructions in a radius of at least twenty-four (24) inches from the center of the shower head.
7. Eyewash and safety shower stations shall be tested monthly and flushed for at least ten (10) seconds to clear the line of any debris.
    a. If the water is not clear, the system shall be flushed for additional time.
        1) If after more than two (2) minutes the eyewash, facewash, or shower does not emit clear water, the test shall be aborted and the unit shall be marked "Do Not Use" with the date and individual who made the determination.
            a) The Instructional Laboratory Technicians, if available, shall be notified.
            b) The Dean of the affected Department shall be notified.
            c) The Facilities Services Department shall be contacted as soon as possible by the individual who conducted the test to perform extended clearing or maintenance, as required.
            d) Chemical operations that are covered by the failed unit shall be suspended until such time as the unit is operational and emits clear water.
    b. Tests may be performed by any employee; but it is the responsibility of the Department which the unit services to ensure the check is performed.
8. Eyewash and safety showers shall be tested annually for proper flow rates.
    a. If flow rates are not part of the Department's monthly checks it must be performed annually. To perform a flow rate check you can follow the procedure below:

        Use a five-gallon container (with a mark at the three-gallon level) and a curtain to channel the water flow into the container. After activation, the level on the container should be reached within 9 seconds or less
        1) Safety showers must be capable of emitting twenty (20) gallons per minute.
        2) Eyewashes must be capable of emitting 0.4 gallons per minute.
        3) Facewashes must be capable of emitting three (3) gallons per minute.
    b. Water must be colorless and odorless.
    c. Water temperature must be between 60 and 100 F.
    d. Results of annual testing must be kept by the Department which is responsible for

the area the unit is located in.
    1) Records shall be kept for at least three (3) years.
9. Records of this test (initial and date) shall be durably attached to the shower or eyewash.
    a. When a tag has become completely filled out, a new tag shall be attached.
        1) In order to demonstrate program continuity, the old tag shall be retained on the unit for no less than six (6) months.
    b. Tags that break or fall off the units must be durably attached to the unit by some means.
    c. If the shower and eyewash units have not been inspected or the inspection has not been documented for the previous month, all operations with hazardous chemicals shall be immediately suspended until the units are checked.
        1) The use of chemicals by students is forbidden in instructional laboratories if nearby safety showers and eyewashes have not been checked.

B. Fire Extinguishers (8 CCR 5543, 8 CCR 6151, NFPA 10)

1. Locations
    a. Fire extinguishers must be located within thirty (30) feet of each instructional laboratory.
    b. Chemical storage locations that contain flammable liquids must have a fire extinguisher located outside of the door but within ten (10) feet of the storage location.
    c. Areas within buildings that contain flammable liquids, such as storage cabinets, must have a fire extinguisher 10-25 feet from the storage area.
2. The location of the fire extinguishers must be clearly identified with signage and visible from at least thirty (30) feet away.
3. At least twenty-four (24) inches of space must remain clear around each fire extinguisher.
4. Fire extinguishers must be stored in cabinets or on hangars to prevent damage.
    a. Extinguishers may not be stored on the floor.
    b. Cabinets may not be locked unless the extinguisher is in a location that is prone to vandalism or theft.
        1) The cabinet must have a means for emergency opening.
5. Fire extinguishers for the appropriate class of fire (A, B, C, or D) for the hazards present shall be immediately available.
    a. Combination extinguishers (e.g., A/B/C) are allowed.
6. Fire extinguishers shall be checked monthly.
    a. Inspections may be performed by any employee; but it is the responsibility of the Department where the extinguisher is installed to ensure the check is performed.
    b. The gauge on the extinguisher must read ‘full’ and be in the green portion of the gauge.
    c. The pull pin must be in place in the handle assembly.
    d. A tamper seal must be in place indicating the extinguisher has not been discharged.
    e. The extinguisher must be physically lifted to determine if extinguishing agent is present in the unit.
    f. A tag recording the inspection must be attached to the extinguisher or the mounting assembly.
    g. If any of the above conditions are deficient, the individual conducting the check shall immediately remove the extinguisher from the hanger and notify the Facilities Services Department to address the extinguisher.
7. Fire extinguishers are inspected and serviced annually by an external contractor.

a. The Facilities Services Department is responsible for coordinating the annual service.
b. Tags are marked with the month and year of the annual inspection.
    1) The inspection will expire one year after the date marked on the tag.
c. During annual testing, replacement or temporary fire extinguishers must be made available.
    1) Instruction may not take place and employees may not work in any area containing flammable or combustible materials that does not have appropriately located and fully-functional fire extinguishers.

8. Records of monthly and annual inspections are attached to the fire extinguisher.
    a. In the event that an extinguisher has not been inspected in the previous month, an immediate inspection shall be conducted and documented on the tag.
    b. In the event that an extinguisher has not been inspected for the previous two months, the extinguisher shall be removed from service and the Facilities Services Department shall be contacted to replace the extinguisher.
    c. In the event that no properly inspected fire extinguisher is within thirty (30) feet of an area where chemicals are being used or stored, all operations with chemicals in that area shall be immediately suspended until a functioning extinguisher is available.
        1) The use of chemicals by students is forbidden in instructional laboratories if nearby fire extinguishers have not been checked within two months.

C. First Aid Kits (8 CCR 3400)

1. A first aid kit should be located in each area where hazardous chemicals or waste are used or stored.
2. The kit shall be inspected monthly by any employee; but it is the responsibility of the Department where the kit is installed to ensure the inspection is performed.
    a. A record of this inspection shall be maintained with the first aid kit.
    b. The kit shall be restocked as necessary or during the monthly inspection.

D. Spill Response Kits

1. Spill response kits shall be located near areas where chemicals are handled, stored, used, or transferred.
2. The kits will be inspected monthly by any employee; but it is the responsibility of the Department where the kit is installed to ensure the inspection is performed.
    a. Any missing, outdated, obsolete, or degraded supplies shall be replaced during the monthly inspection.
3. Materials within the spill kit will be appropriate for the chemicals used in the immediate vicinity.
4. Spill kits shall be restocked whenever any portion is used for any purpose.

XI. MEDICAL CONSULTATION AND EXAMINATIONS

A. Medical Assistance

1. San Diego Mesa College shall provide employees, by way of the district-contracted

occupational medical provider, medical consultation, monitoring, or examinations at no charge under the following circumstances:

a. When an employee develops signs or symptoms of chemical exposure
b. When employer monitoring demonstrates environmental levels that exceed published action levels or exposure limits
    1) Action and exposure levels may be found in references produced by
        a) Occupational Safety and Health Administration (OSHA)
        b) National Institute of Occupational Safety and Health (NIOSH)
        c) American Conference of Governmental Industrial Hygienists (ACGIH).
    2) Exposure levels are typically reported as 8-hour time weighted averages.
    3) Monitoring may be accomplished by
        a) Air monitoring
        b) Air sampling
        c) Personal monitoring devices.
c. When an emergency event, such as a leak, spill, release, or explosion occurs that has a high likelihood of a hazardous exposure.

2. The employee shall be allowed to attend exposure-related medical appointments during normal work hours without using vacation or sick leave hours.
3. The supervisor or Dean shall provide the contracted medical provider with the following information prior to the appointment:
    a. Identity of substances the employee was or may have been exposed to
    b. Description of the conditions under which the exposure occurred, including any monitoring data
    c. Signs and symptoms the employee was demonstrating indicating potential chemical exposure.
4. The healthcare professional shall provide a written opinion that includes
    a. Any recommended additional medical treatment(s)
    b. Results of the examination, if requested by the employee
    c. Existing medical conditions that may increase an employee's risk associated with potential exposures
    d. A statement that the employee has been informed by the healthcare professional of the results and any conditions that may require additional examinations or treatments.
    e. Diagnoses unrelated to the occupational exposure shall not be included in the written opinion.
5. An *Injury and Illness Incident and Investigation Report* shall be completed by the supervisor and forwarded to the Risk Management Office.
6. A copy of the healthcare provider's opinion shall be forwarded to the Risk Management Office.

XII. CHEMICAL SPILL EMERGENCY RESPONSE PROCEDURES

For the purpose of this section chemical spills will be separated into two categories: Incidental Spills and Emergency Spills.

A. Incidental Spills

An incidental spill is the release of a hazardous substance which does not pose a significant

safety or health hazard to employees in the immediate vicinity or to the employee cleaning it up, nor does it have the potential to become an emergency within a short time frame. Incidental spills are limited in quantity, exposure potential, or toxicity and present minor safety or health hazards to employees in the immediate work area or those assigned to clean them up. An Incidental spill that can be safely cleaned up by employees who are familiar with the hazards of the chemical, without the aid of a coordinated response effort from employees outside the area, would not be considered an emergency incident under 29 CFR 1910.120.

The properties of hazardous substances, such as toxicity, volatility, flammability, explosiveness, corrosiveness, etc., as well as the particular circumstances of the release itself, such as quantity, confined space considerations, ventilation, etc., will have an impact on what employees can handle safely and what procedures should be followed. Additional factors should be evaluated for spill clean-up such as; the knowledge of the employee in the immediate work area, the personal protective equipment (PPE) at hand, and the pre-established standard operating procedures for responding to releases of hazardous substances.

A guideline for Incidental spills quantity would be less than 2 L of low hazard materials, including volatiles and irritants, and less than 50 mL of highly hazardous materials. Remember that each chemical presents different types of hazards as well as each spill location and such conditions will need to be evaluated prior to responding to a spill. Consult the SDS for guidelines on proper spill clean-up.

1. If a person is splashed with chemicals, rinse the area with copious amounts of water.
    a. For splashes to the eyes and face assist the individual to the eyewash station and flush eyes for fifteen (15) minutes, holding the eyelids open.
        1) Employees assisting exposed individuals shall wear appropriate protective clothing (gloves, goggles, apron) to prevent further contamination.
    b. For significant body exposures, individual shall proceed to a safety shower and be doused with water for ten (10) minutes.
    c. Campus Police (**6405** or **619-388-6405**) or 911 shall be called immediately
    d. The SDS of the chemical involved shall be provided to the first responders by the supervisor or staff.
2. If the spill is of a volatile material, the evacuation of the immediate area is at the discretion of the supervisor and will be based on the nature of the material.
    a) If the spill is moderate in size but is not large enough to trigger an emergency response action, the immediate area should be evacuated of all employees and students until the spill is properly cleaned up.
    b) The area of the spill shall be cordoned off by way of caution tape or closing laboratory doors.
3. Students and employees not involved in addressing the spill shall be excluded from the area to prevent exposure or slipping.
4. These spills can be handled by the employee responsible using the nearest spill kit ONLY if appropriately trained and equipped.
    a. If not trained or equipped to clean up spill, the employee shall notify their supervisor for further instructions.
    b. Protective equipment must be worn (goggles, gloves, shoe covers).
    c. Kimwipes or paper towels can be used to clean up the spill.
        1) Paper products shall not be used to clean up oxidizing acids or other oxidizing materials.
    d. Any sorbent material (pillows, pads, absorbent solids) or other disposable material used shall be packaged in a plastic bag, sealed, and disposed of as hazardous

waste.

e. Any reusable items used during spill cleanup, such as dustpans and hand brooms, shall be decontaminated after use.
    1) Any liquid used, such as soap and water, to clean reusable spill cleanup items must be collected and disposed of as hazardous waste.
        a) Under no circumstances is the used solution to be disposed of in any sink.

5. If chemicals are migrating towards drains, sanitary sewer accesses, or surface waters, the nearest spill kit shall be accessed.
    a. Pillows, pads, or berms shall be placed around the spill to prevent migration of the liquid.
    b. If dirt is used to berm the flow of chemical, the dirt shall be collected and disposed of as hazardous waste to a depth of at least six (6) inches.
6. If an employee is injured or exposed the Dean or Supervisor will complete and submit an Injury and Illness Incident and Investigation Report within 24 hours. http://www.sdmesa.edu/college-services/safety/forms/IIPP-District-incident-Investigation%20Form.pdf
    a. A copy of the form will be forwarded to the Risk Management Office within forty-eight (48) hours of the spill
    b. A copy of the form will be sent to both the VPA and the campus OEHS Coordinator.
    c. The Chemical Hygiene Officer will identify any operational or equipment changes or modifications that may prevent any a future releases and associated exposures.
7. If no injury or exposure occurs then the Dean or Supervisor will complete and submit a Near-Miss and Accident Investigation Report and submit it to the Campus OEHS Coordinator so an investigation can be done and recommendations can be made to prevent future spills. http://www.sdmesa.edu/college-services/safety/forms/IIPP-Campus-Near-Miss-and-Accident-Report.pdf
8. If the chemical touches bare earth, surface water, or enters a public sewer, the Chemical Hygiene Officer in consultation with Risk Management will properly notify the San Diego County Hazardous Materials Division of the release for proper reporting and further required actions.

B. Emergency Response Spills

An emergency spill would constitute that a clean-up response effort would be needed by employees from outside the immediate release area or by other designated responders - (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance.

The release or situation must pose an emergency. Examples are: it may cause high levels of exposures to toxic substances, it is life or injury threatening, it poses IDLH conditions, it poses a fire and explosion hazard (exceeds or has potential to exceed 25% of the LEL), it requires immediate attention because of danger, or presents an oxygen deficient condition. Nuisance spills, minor releases, etc., which do not require immediate attention (due to danger to employees) are not considered emergencies.

A guideline for emergency spill response would be, liquid spills of more than two liters (2 L), more than fifty milliliters (50 mL) of highly hazardous materials, uncontrolled off-gassing of chemical reactions, and leaking cylinders require personnel with specific training using higher

levels of personal protective equipment. Staff and Faculty will not use respirators during clean up, if respirators are needed then the procedures below need to be followed.

1. College Police Dispatch (**6405** or **619-388-6405**) shall be contacted immediately to request assistance from the local Hazardous Materials Response team or hazardous waste contractor to address the release/spill.
    a. The Dean or supervisor shall be notified.
        1) Depending on the amount, areas impacted, and the type of chemical, the *Emergency Action Plan* may be initiated. Refer to the District's *Emergency Action Plan* for more information.
    b. The location, material spilled and possible injuries shall be relayed to College Police.
2. Injured persons shall be assisted and addressed as applicable and contaminated persons, even if injured, shall be isolated.
    a. Unless properly trained and equipped with chemical protective equipment, employees should not render first aid in order to avoid contamination or chemical exposure.
3. The Supervisor or Dean will determine if the *Emergency Action Plan* needs to be initiated.
    a. The Vice President of Administrative Services and the OEHS Coordinator shall be notified of the spill as soon as possible. The Facilities Director (RFO) shall be if assistance is needed.
4. The area around the spill/release shall be cordoned off at a safe distance, determined by the amount, scope, and chemical involved.
5. The HVAC system in building shall be turned off by the Facilities Services Department or the area shall be atmospherically isolated from other locations.
    a. Power to any fume hoods in the vicinity must be maintained, if possible.
6. For flammable chemical spills or gas releases, all sources of ignition need to be immediately extinguished, including open flames, heating mantles, vacuum pump motors, and powered equipment.
7. The Chemical Hygiene Officer or any staff member shall provide the SDS to first responders.
8. The Dean or Supervisor will complete and submit an *Injury and Illness Incident and Investigation Report* within twenty-four (24) hours.
    a. A copy of the form will be forwarded to the Risk Management Office within forty-eight (48) hours of the spill
    b. A copy of the form will be sent to both the VPA and the campus OEHS Coordinator.
    c. The Chemical Hygiene Officer will identify any operational or equipment changes or modifications that may prevent any a future releases and associated exposures.
9. The Chemical Hygiene Officer, the appropriate supervisor, and (if needed) Risk Management will identify any operational or equipment changes or modifications that may prevent any a future releases and associated exposures.

XIII. TRAINING

1. Each new employee will be trained on the components of this *Program* prior to working with any chemicals.
    a. Additional training can be found in the Environmental section of the Keenan

SafeColleges website.

2. Employees who work with any of the following require substance-specific training per the applicable regulations:
    a. Asbestos (8 CCR 5208)
    b. Benzene (8 CCR 5218)
    c. Carcinogens (8 CCR 5209)
    d. Chromium VI (8 CCR 5206)
    e. Formaldehyde (8 CCR 5217)
    f. Lead (8 CCR 5216)
    g. Refer to *Appendix D: Select Substances of Concern* for additional information.
3. San Diego Mesa College is responsible for conducting annual re-training for employees that provides them with information on chemical hygiene, chemical handling, and general chemical safety.
4. Records of this training will be retained by the Dean or supervisor and forwarded to the Campus OEHS Coordinator.
    a. Training records must be kept for five (5) years.

5. Designated employees who will be responsible for handling or consolidating waste for preparation of collection and who will be authorized to sign waste manifests shall undergo training pursuant to
    b. US Department of Transportation (DOT) training (49 CFR 172.704) or training that satisfies Title 22 for hazardous waste generators.
6. The Chemical Hygiene Officer must undergo all training noted in this section, plus:
    a. 29 CFR 1910.120/8 CCR 5192 (Hazardous Waste Operations and Emergency Response (HAZWOPER))
        1) Forty (40) hours of initial training, including respiratory protection training, and the required annual 8-hour refresher training.

XIV. RECORDS

The following records shall be retained:

1. Training records shall be retained for five (5) years
    a. HAZWOPER and DOT training certificates should be retained until the employee separates service with the District.
2. Manifests and records of Universal Waste disposal shall be retained for thirty (30) years
3. The SDS's for chemicals no longer used within the Department, archived chemicals, shall be retained until thirty (30) years after the chemical was removed from the inventory.
4. *Injury Incident and Illness Investigation Reports* shall be kept pursuant to the Worker's Compensation guidelines.
5. Unless noted above, records for eyewash, safety shower, and fire extinguisher inspections shall be retained on the tag until space is no longer available.
    a. Tags shall not be removed until all spaces have been filled in.
    b. If an inspection is missed, the tag shall not be removed to start a new tag.
        1) The date of the next inspection shall be entered sequentially.
6. Fume hood verification records shall be kept for three (3) years.

Appendix A:
Special Waste Category Handling Requirements

A. Liquid Paint

1. Unused liquid paint shall be managed either by
    c. Transporting to a paint recycle center (preferred) or
    d. Handling as hazardous waste.
2. Paint to be recycled
    a. Containers shall be properly sealed to prevent spillage.
    b. Liquid paint shall be included in the totals in determining the generator class (large or small).
    c. Containers shall be marked with the date they were designated as waste.
    d. San Diego Mesa College shall coordinate with the recycle center to determine ability to accept paint from the College and the types of waste paint, including aerosol cans, generated by the College.
3. Paint to be disposed
    a. San Diego Mesa College can:
        1) Consolidate the liquid paint by pouring it into an appropriate and properly labeled hazardous waste container
            a) The accumulation date shall be when the first paint is placed in the container.
            b) When dry, the empty paint containers may be disposed of as solid waste.
            c) No other hazardous waste shall be placed in the liquid paint receptacle.
        2) Containerize the paint containers by sealing them and placing them into an appropriate and properly labeled hazardous waste container
            a) The accumulation date shall be when the first paint container is placed in the container.
        3) Place a hazardous waste label on each container of unused or unwanted liquid paint.
            a) Each container must have a properly completed hazardous waste label.
            b) The accumulation start date shall be noted as the date the paint was designated as waste.
    b. The total paint volume must be considered during hazardous waste generator classification determination.

B. Dry Paint

1. Dry paint in containers or items contaminated with non-liquid paint may be disposed of in regular solid waste.
2. Under no circumstances can the lid of a container with liquid paint be removed with the intention of allowing the solvent to evaporate off to render the item non-hazardous waste.
    a. This is considered treatment which requires a permit.

C. Oily Rags

1. Rags contaminated with oil, gasoline, solvents, or paint may be hazardous if they are saturated to the point of dripping or leave a residue on the hands when held.
    a. If the rag does not drip or leave a residue, it can be laundered for reuse or disposed of in regular trash.
2. Contaminated rags must be placed in spring loaded metal cans designated for oily rags.
    a. The lid must remain closed unless rags are being added or removed from container.
    b. The can must be emptied daily.
        1) Rags must be stored in a closed-top container that is properly labeled as hazardous waste.
        2) The container must be labeled "Oily Rags" and no other solid waste may be included in that container.
        3) Rags may be laundered or disposed of within the time limits set forth by the generator class of the Facility or College.

D. Empty Containers

1. Empty containers that previously held hazardous materials or hazardous waste are themselves considered hazardous unless they are 'California empty.'
    a. All liquid contents must be transferred from the container to the point where inversion will not produce a constant dripping.
    b. Solid material must be scraped from container.
    c. Containers that held extremely hazardous waste must be triple-rinsed with an appropriate solvent.
        1) The rinses must be captured and disposed of as hazardous waste.
2. These containers must be properly managed.
    a. For containers larger than five (5) gallons, the container must be legibly and obviously labeled with the word 'empty'
        1) On the lid
        2) On the side
        3) Original labels to identify previous contents must be retained.
        4) The date the contents were removed and the container designated as waste must be legibly and obviously marked on the container.
    b. Containers must be disposed of within one (1) year of being emptied.
        1) Containers less than five (5) gallons in size may be disposed of in regular trash.
        2) Containers more than five (5) gallons in size must be recycled, reconditioned, reused, or disposed of as hazardous waste.
            a) Records of the facility the container was shipped to, including name, address, mailing address, and phone number must be kept for three (3) years.
    c. The lid or bungs must be securely fastened at all time.
3. Containers that are to be reused for waste once their contents have been removed shall abide by the following
    a. Containers may be reused but only with wastes that are compatible to the previous contents.

b. Containers that are intended to be used as waste containers shall be marked 'available for reuse.'

E. Pesticides

1. Every effort should be made to use as much of the pesticide as possible.
2. If a product is no longer used, the entire container shall be placed in the hazardous waste storage area and properly labeled as a hazardous waste.
3. If most of the product has been used, the container can be triple-rinsed with water and disposed of as solid waste.
    a. Residual product can be transferred to other containers of the same product for use.
    b. The rinsates can be captured and used for their original purpose or disposed of as hazardous waste.

Appendix B:
Hazardous Waste Categories for Biennial Report

A. EPA Hazardous Waste Numbers

1. Ignitable- liquid with flash point <60 C (140 F) or solid that is flammable due to friction, water, spontaneous reaction, or is ignitable (22 CCR 66261.21)
    a. D001
2. Corrosive- liquid with a pH <2 or >12.5 or solid that produces similar solution with water (22 CCR 66261.22)
    a. D002
3. Reactive- water reactive, pyrophoric, or spontaneously combustible (22 CCR 66261.23)
    a. D003
4. Toxic: refer to tables in 22 CCR 66261.24
5. Non-specific sources, refer to tables (22 CCR 66261.31)
    a. F002- spent halogenated solvents
        1) Methylene chloride, carbon tetrachloride
    b. F003- spent non-halogenated solvents
        1) xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol
    c. F005- spent non-halogenated solvents
        1) toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane

B. California Hazardous Waste Category

Waste Code	Waste Description
Inorganics	
121	Alkaline solution (pH >= 12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
122	Alkaline solution without metals (pH >= 12.5)
131	Aqueous solution (2 < pH < 12.5) containing reactive anions (azide, bromate, chlorate, cyanide, fluoride, hypochlorite, nitrite, perchlorate, and sulfide anions)
133	Aqueous solution with 10% or more total organic residues
134	Aqueous solution with less than 10% total organic residues
132	Aqueous solution with metals (restricted levels and see waste code 121 for a list of metals)
181	Other inorganic solid waste

162	Other spent catalyst
123	Unspecified alkaline solution
135	Unspecified aqueous solution
Organics	
322	Biological waste other than sewage sludge
211	Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)
213	Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
342	Organic liquids with metals (see 121)
352	Other organic solids
212	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
231	Pesticide rinse water
232	Pesticides and other waste associated with pesticide production
223	Unspecified oil-containing waste
343	Unspecified organic liquid mixture
214	Unspecified solvent mixture
221	Waste oil and mixed oil
Sludges	
461	Paint sludge
Miscellaneous	
513	Empty containers less than 30 gallons
511	Empty pesticide containers 30 gallons or more
551	Laboratory waste chemicals
512	Other empty containers 30 gallons or more
541	Photochemical/photo processing waste
California Restricted Wastes	
721	Liquids with arsenic >= 500 mg/l
722	Liquids with cadmium >= 100 mg/l
723	Liquids with chromium (VI) >= 500 mg/l)
711	Liquids with cyanides >= 1000 mg/l
741	Liquids with halogenated organic compounds >= 1000 mg/l

724	Liquids with lead >= 500 mg/l
725	Liquids with mercury >= 20 mg/l
726	Liquids with nickel >= 134 mg/l
791	Liquids with pH >= 2
792	Liquids with pH >= 2 with metals
727	Liquids with selenium >= 100 mg/l
728	Liquids with thallium >= 130 mg/l

C. DOT Hazard Classes

Class No.	Division No. (if any)	Name of class or division	49 CFR reference for definitions
None		Forbidden materials	173.21
None		Forbidden explosives	173.54
1	1.1-1.6	Explosives	173.50
2	2.1	Flammable gas	173.115
2	2.2	Non-flammable compressed gas	173.115
2	2.3	Poisonous gas	173.115
3		Flammable and combustible liquid	173.120
4	4.1	Flammable solid	173.124
4	4.2	Spontaneously combustible material	173.124
4	4.3	Dangerous when wet material	173.124
5	5.1	Oxidizer	173.127
5	5.2	Organic peroxide	173.128
6	6.1	Poisonous materials	173.132
6	6.2	Infectious substance (Etiologic agent)	173.134
7		Radioactive material	173.403
8		Corrosive material	173.136
9		Miscellaneous hazardous material	173.140
None		Other regulated material: ORM-D	173.144

Appendix C:
Select Substances of Concern

A. Asbestos (8 CCR 5208)

Asbestos refers to several mineral fibers that have been associated with respiratory illnesses. Because of its insulating properties and its resistant to flame, asbestos has been used in insulation and fire-retardant materials as well as floor tiles and brake pads. "Asbestos containing material" (ACM) is defined as any product or material that contains more than 1% asbestos. Asbestos was one of the first materials to be regulated by OSHA and has received much attention over the years. Due to the hazards, development of replacement materials, and the association with negative health consequences, the use of asbestos has been reduced dramatically.

However, due to its prevalence in construction materials used from the 50's to 70's, ACM are still commonly encountered in older buildings. There is no ban in the United States for using asbestos, but the health concerns have dramatically impacted its use.

Asbestos exposure is associated with inhaling small fibers typically during demolition or repair activities. If left alone, ACM pose absolutely no hazard to employees. However, as the products begin to age and deteriorate, they may fragment, break off, or require repair which then can expose an employee to the hazard. By its nature, asbestos fibers break into smaller fibers, a property called 'friability.' These fibers can fracture to such a small size that they can be inhaled and lodge in the small air sacs of the lungs called alveoli. Since the body cannot eliminate these fibers, the body responds to the contaminant by building scar tissue around the fibers, resulting in reduced lung function- a condition called asbestosis. Asbestos inhalation can also result in lung cancer or mesothelioma, tumor growth on the membrane lining the lung or stomach cavity.

Exposure to asbestos is reduced by protecting the airway with high-efficiency particulate air filters (HEPA). Filtering facepieces cannot be used to protect employees from asbestos exposure.

The only way to determine whether a material contains asbestos is to have it tested by a certified laboratory. If materials are then identified as containing asbestos, they must then be removed by a contractor licensed to perform asbestos abatement. Special equipment, controls, and monitoring are required to properly, safely, and completely remove ACM. Asbestos waste is removed using wet processes, is packaged separate from other wastes, and is disposed of as hazardous waste.

1. The Regional Facilities Officer at San Diego Mesa College should be knowledgeable regarding the presence or absence of any ACM at their campus.
    a. Natural rock or soil sources are excluded from this provision.
2. The RFO can request assistance from the Director of Facilities or the District Architect regarding identifying potential ACM.
3. If a material is suspected of containing asbestos, the material must be sampled and sent to a certified asbestos laboratory for analysis.
    a. No work shall be done on or near the suspected ACM until the certified report has been received from the laboratory.
    b. If the report comes back negative, work shall commence without restrictions.
    c. If the report comes back positive, a licensed asbestos abatement company shall be contacted to remove and dispose of the ACM.

1) After proper remediation is complete, work shall commence without restrictions.
2) A certification from the abatement contractor shall be kept on file until such time as the building is demolished.

d. All laboratory reports and abatement certifications shall be kept by the Regional Facilities Officer, the Director of Facilities, and the District Architect until such time as the building is demolished.

B. Benzene (8 CCR 5218)

Benzene is a clear, colorless liquid that is derived from coal and petroleum processing. It is found in gasoline, other fuels, and chemistry laboratories. It has a model-glue or paint-thinner like odor. Benzene is a flammable liquid with a flash point of 12 F and evaporates easily having a boiling point of 176 F.

The OSHA PEL is 1 ppm TWA and 5 ppm STEL. The NIOSH REL is 0.1 ppm TWA and 1 ppm STEL. Benzene is a potential human carcinogen. The action level of benzene, that level at or above which specific training and controls must be implemented, is 0.5 ppm TWA (8 CCR 5218).

Short-term exposure to large amounts of benzene vapors can cause drowsiness, dizziness, unconsciousness and death. Long-term exposures over the TWA have been linked to leukemia as well as bone marrow and blood production deficiencies.

1. These restrictions do not apply to
    a. Gasoline or other fuel operations (unless that operation occurs indoors for more than four (4) hours per day) or
    b. Mixtures of benzene less than 0.1% by volume.
2. Fuel shall be stored, handled, and transferred in outdoor locations whenever possible.
    a. Supervisors whose employees handle or transfer gasoline into portable containers shall provide their employees with the following protective equipment:
        1) Safety goggles
        2) Polyvinyl alcohol (PVA) chemical resistant gloves
3. For instructional laboratories,
    a. The Laboratory Supervisor OR OTHER RESPONSIBLE PARTY needs to retain a record regarding the usage of benzene for experiments.
        1) If benzene is used less than ten (10) days per calendar year, there is no requirement for employee medical surveillance specific to benzene (8 CCR 5218 (i)(1)(A)).
    b. Benzene and benzene-containing wastes shall only be handled in functioning, certified, fume hoods.
    c. Benzene containers shall be stored in properly ventilated flammable storage cabinets.
        1) Annual testing for benzene shall be conducted in storage rooms that contain benzene, including waste accumulation locations.
        2) The Risk Management Office must be notified if the measured level for benzene only exceeds 0.5 ppm TWA.
    d. Employees who transfer benzene or benzene-containing wastes shall use the following protective equipment:
        1) Safety goggles
        2) Polyvinyl alcohol (PVA) chemical resistant gloves.
    e. As benzene shall only be handled, transferred, heated, or mixed in certified, functioning fume hoods and well-ventilated areas, there is no exposure hazard to employees and additional monitoring, controls, and medical surveillance is not required.

C. Carcinogens (8 CCR 5209)

1. San Diego Mesa College, during its chemical inventory, must determine whether any of the following carcinogens as identified by the State of California are present at the listed concentration:

Chemical	Concentration
2-Acetylaminofluorene	1.0
4-Aminodiphenyl	0.1
Benzidine (and its salts)	0.1
3,3'-Dichlorobenzidine (and its salts)	1.0
4-Dimethylaminoazobenzene	1.0
alpha-Naphthylamine	1.0
beta-Naphthylamine	0.1
4-Nitrobiphenyl	0.1
N-Nitrosodimethylamine	1.0
beta-Propiolactone	1.0
bis-Chloromethyl ether	0.1
Methyl chloromethyl ether	0.1
Ethyleneimine	1.0

2. If any of these substances are determined to be present, the Chemical Hygiene Officer must implement the requisite policies and procedures for safe handling and storage.

D. Chromium VI (8 CCR 5206) (ELIMINATE IF NO WELDING OPERATIONS OCCUR AT COLLEGE)

Hexavalent chromium, also referred to as 'Chrome 6' or 'hex chrome,' is a toxic form of the metal chromium. Most occupational exposures to Chrome 6 occur during the welding of chrome-containing alloys, including stainless steel.

Inhalation of Chrome 6 fumes has been attributed to lung cancer, nose and throat irritation, and damage to eyes and skin. Also, welding fumes have been suspected of making welders more susceptible to pneumonia and other respiratory illnesses.

Most Chrome 6 exposures occur by inhaling the metal fumes generated during the welding process. Exposure to the fumes is controlled by exhausting the fumes away from the employee and providing respiratory protection to filter the fumes.

The following shall be implemented for any welding of chromium-containing metals, including stainless steel:

3. Welder shall position themselves, whenever possible, out of visible fume plume
4. Welder shall wear filtering facepiece.
    f. Refer to the District's *Respiratory Protection Program* for additional requirements.
5. The welding operation shall be outfitted with local exhaust ventilation (LEV)
    g. The intake must be able to be positioned within six (6) inches of the work to remove the fumes.
    h. LEV must be capable of at least 100 fpm.
    i. If LEV is not available, welding shall be performed in a booth or in an exterior location.
        1) The booth shall have full containment including overlapping panels for access.
        2) Booth shall have negative exhaust ventilation of at least 100 fpm with a filter to capture fumes.
        3) Booth access shall be restricted to only those individuals with respiratory protection in addition to eye protection from welding arc and sparks.
6. Due to the infrequent exposure of employees to welding, less than 30 days per year, engineering controls, work practice controls, monitoring, and medical surveillance are not required (8 CCR 5206(g)(1)(D)).

E. Formaldehyde (8 CCR 5217)

Human anatomy labs incorporate the use of preserved human cadavers. During the course of study, these cadavers are dissected and inspected to familiarize students with human systems. The preservative used in cadavers in California contains 2.5-5% formaldehyde, by volume of concentrate. The final concentration in a human specimen is unknown.

Short-term exposure to low levels of formaldehyde can cause sore throat, cough, eye irritation, and nosebleeds. Exposure to the skin can cause irritation and contact dermatitis. Long-term exposure can result in nose and throat cancers.

Formaldehyde exposure is controlled using ventilation and, if necessary, respiratory protection.

Additional information can be found in the San Diego Mesa College Formaldehyde Program
http://www.sdmesa.edu/college-services/safety/policies-plans/Formaldehyde-Program.pdf

1. San Diego Mesa College uses preserved human cadavers in instructional settings and shall incorporate testing to determine the need for additional controls and medical surveillance.
    a. Testing shall be accomplished by way of
        1) Personnel monitors, such as badges
        2) Air monitoring
        3) Air sampling
    b. Testing shall be conducted
        1) To demonstrate compliance with this *Program*
        2) Whenever San Diego Mesa College is notified that the embalming fluid solution has changed
        3) Whenever conditions in the work area change such as; new cadaver being used, additional cadavers are added to room.
        4) When employees report symptoms of potential exposure
    c. The Testing program shall
        1) Have a written sampling plan
            a) If badges are used, at least two (2) individuals must be tested, including faculty, students, and instructional laboratory technicians
            b) If air monitoring is used, at least ten (10) samples shall be collected, five (5) of which are collected in the breathing zone of those individuals performing the dissections.
            c) Testing must occur over at least two (2) different laboratory sessions
        2) Record the following (8 CCR 5217 (o)(1))
            a) Date of sampling
            b) Operation being monitored
            c) Method of sampling, including accuracy and precision
            d) Number, duration, time, and results of sampling
            e) Types of PPE being used
            f) Name, job classification, social security numbers, and exposure estimates of monitored employees
        3) Include a written report of results
            a) Results must include uncertainty of measurement statements
            b) Results will be reported as eight-hour time weighted averages

4) A copy of the report shall be
    a) Presented to the faculty and employees involved in the cadaver program
    b) Provided to the OEHS Coordinator
5) The testing records and report must be kept for thirty (30) years.

2. The following is based on the results of the testing.
    a. If the TWA is less than 0.1 ppm, no training or other formaldehyde-specific requirements apply.
        1) Additional air monitoring is not required unless there is a change in procedures or preservative chemical.
    b. If the TWA is between 0.1 and 0.5 ppm TWA
        1) The area and bags containing cadavers must be labeled
            a) That they contain formaldehyde
            b) With the name and address of the UCSD body donation program
            c) Statement that the physical and health hazard information is available from the employer and from the SDS
        2) San Diego Mesa College must train the faculty and instructional lab technicians
            a) At the time of initial assignment
            b) Annually
        3) The training program must include
            a) Discussion of 8 CCR 5217
            b) Purpose for and description of the medical surveillance program
            c) Health hazards of formaldehyde
            d) Signs and symptoms of formaldehyde exposure
            e) Reporting protocol for potential formaldehyde exposure
            f) Description of operations involving cadavers
            g) Explanation of safe work practices
            h) Use and limitations of PPE
            i) Emergency response, including spills and clean up procedures
            j) Engineering and work practice controls
            k) Review of emergency procedures
            l) How to locate written training materials
    c. If the TWA exceeds 0.5 ppm, in addition to ‘b’ above, San Diego Mesa College shall
        1) Conduct air monitoring as noted above every six (6) months (8 CCR 5217 (d)(3)(A))
        2) Notify employees of the measured levels within fifteen (15) days of obtaining results
        3) Provide additional required PPE, including respiratory protection
        4) Install required signage pursuant to 8 CCR 5217 (e)(1)(A) and (h)(2)(B)(1)
        5) Institute a formaldehyde medial surveillance program as outlined in 8 CCR 5217 (l)

F. Lead (8 CCR 5198)

The requirements for testing and monitoring relate to employee exposure of airborne lead particles (8 CCR 5198 (d)(3)(A)(2). As the processes that use lead do not generate airborne inhalable or respirable particles, San Diego Mesa College has determined that the monitoring, medical surveillance, and control methods are not required as they pertain to lead.

Appendix E:
MS building Hazardous Chemical Study

*The new identity of **X-nth***

Mesa College Laboratories Chemical Inventories Study
February 15, 2012

Introduction

The Mesa College Mathematics and Natural Sciences Building is currently in design and construction. This building contains a variety of chemistry and biology departments which use chemicals for classes and research, with the Biology department on the 2nd and 3rd floors and the Chemistry department on the 4th floor.

The purpose of this study is to evaluate the list of chemicals, their hazards, and the quantities to be stored in relation to the limits and regulations provided in the 2007 California Building Code (CBC). Because the Biology and Chemistry departments are on elevated levels of the building, quantities are reduced from the maximum allowed on the 1st floor. Using this study, Mesa College will need to evaluate and modify chemical handling and storage so the limits are not exceeded.

Users groups (Biology & Chemistry) have provided updated lists of actual amounts of chemicals to be used in each area. This inventory is a function of who is teaching, the class syllabus, number of experiments, number of students, and the number of labs per day. In addition to chemicals in storage and use, wastes are generated. **Exp** does not have information on amounts of waste generated per day and has not included waste storage quantities in this study.

Scope of Study

Using the chemical inventory lists provided by the User groups, spreadsheets were created for Biology and Chemistry that listed each chemical and its properties. Information on each chemical was obtained from the Material Safety Data Sheet (MSDS) for that chemical. These included:

- Chemical name
- Rat LD50 Oral
- Rabbit LD50 Dermal
- Boiling point
- Quantity
- Rat LC50 Inhale
- Flash point
- Hazards class (toxic, corrosive, oxidizer, etc.)
- Links to MSDS

The sections of the CBC that are applicable to this study are:

- Chapter 3 - Use and Occupancy Classification, Section 307 High Hazard Group H. In this section, TABLE 307.1(1) Maximum Allowable Quantity Per Control Area of Hazardous Materials Posing a Physical Hazard provide guidance on the quantities of materials allowed per control area per floor.

- Chapter 4 - Special Detailed Requirements Based on Use and Occupancy, Section 414 Hazardous Materials. In this section, Table 414.2.2 Design and Number of Control Areas provides guidance on the maximum allowable quantities per control area per floor.

These tables are provided in the Appendix to this report.

Study Results

For each type of hazardous material classification, the allowable quantity was determined using the CBC sections and tables. This quantity varies based on the hazard class, building level, sprinklers, and use of approved storage cabinets. They also vary based on whether the containers are in storage (MAQ Storage) or in use (MAQ Use – Closed).

For chemicals that are in containers and are stored in approved cabinets, these are classified as MAQ Storage quantities. Table 1 summarizes the hazardous chemicals in the Biology and Chemistry labs for all chemicals assuming they fall into the MAQ Storage classification. The table has highlighted values where the total quantities exceed the allowable limits.

When containers are opened and materials are poured out, they are no longer considered in storage and are in use. The two types of "in use" categories are for Open and Closed systems. From the CBC, the definitions of these two systems are:

- Closed System: **The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.**

- **Open System: The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.**

For chemicals that are in containers under hoods and are being opened for dispensing and use, we believe they fall into the MAQ Use – Closed category since the hood would be considered a system that does not allow the vapors to be emitted outside the system. However, this category has a lower limit of allowable quantities especially for oxidizers and highly toxics than the Storage category. At any given time, various containers will be used depending on the class and experiments. Therefore, we evaluated the MAQ Use – Closed limits against the largest container on the list from the users for a specific hazards classification. Table 2 summarizes the hazardous chemicals in the Biology and

Chemistry labs under the Use – Closed category and highlights those where a single container is over the allowable limit.

Due to the Chemistry laboratory being located on the 4th floor, the allowable quantities in most cases are reduced to 12.5% of the 1st floor allowable quantities. This results in several hazard classifications being exceeded in the single control area. Separation into two control areas would allow for twice as many chemicals to be stored. Per the CBC, only two control areas can be placed on each floor at these floor levels (3rd and 4th floors). Three control areas can be placed on the second floor.

Table 1: Maximum Allowable Quantity (MAQ) per Control Area for Stored Material

Material	Class	MAQ Storage		Adjustment for floor level				Adjustment for sprinkler and cabinets				Actual Stored Chemicals			
				Biology		Chemistry		Biology		Chemistry		Biology		Chemistry	
Combustible (l)	II	120	gal	60	gal	15	gal	240	gal	60	gal	6.74	gal	19.41	gal
Combustible (l)	IIIA	330	gal	165	gal	41.25	gal	660	gal	165	gal	5.13	gal	20.66	gal
Combustible (l)	IIIB	13200	gal	6600	gal	1650	gal	26400	gal	6600	gal	0.46	gal	0.82	gal
Flammable (l)	1A	30	gal	15	gal	3.75	gal	60	gal	15	gal	1.05	gal	5.68	gal
Flammable (l)	1B	120	gal	60	gal	15	gal	240	gal	60	gal	42.85	gal	93.28	gal
Flammable (l)	1C	Combined w/1B													
Flammable (s)		125	lbs	62.5	lbs	15.63	lbs	250	lbs	62.5	lbs	3.91	lbs	180.20	lbs
Oxidizer (l)	4	1	lbs	0.5	lbs	0.13	lbs	2	lbs	0.5	lbs	0.00	lbs	0.00	lbs
Oxidizer (l)	3	10	lbs	5	lbs	1.25	lbs	20	lbs	5	lbs	0.40	lbs	39.63	lbs
Oxidizer (l)	2	250	lbs	125	lbs	31.25	lbs	500	lbs	125	lbs	0.00	lbs	6.92	lbs
Oxidizer (l)	1	4000	lbs	2000	lbs	500	lbs	8000	lbs	2000	lbs	0.00	lbs	2.64	lbs
Oxidizer (s)	4	1	lbs	0.5	lbs	0.13	lbs	2	lbs	0.5	lbs	0.00	lbs	5.30	lbs
Oxidizer (s)	3	10	lbs	5	lbs	1.25	lbs	20	lbs	5	lbs	1.10	lbs	4.85	lbs
Oxidizer (s)	2	250	lbs	125	lbs	31.25	lbs	500	lbs	125	lbs	3.29	lbs	59.19	lbs
Oxidizer (s)	1	4000	lbs	2000	lbs	500	lbs	8000	lbs	2000	lbs	1.21	lbs	117.43	lbs
Corrosive (s)		5000	lbs	2500	lbs	625	lbs	10000	lbs	2500	lbs	9.82	lbs	258.42	lbs
Corrosive (l)		500	gal	250	gal	62.5	gal	1000	gal	250	gal	26.69	gal	30.66	gal
Highly Toxic (s)		10	lbs	5	lbs	1.25	lbs	20	lbs	5	lbs	0.98	lbs	49.59	lbs
Highly Toxic (l)		10	lbs	5	lbs	1.25	lbs	20	lbs	5	lbs	0.13	lbs	6.58	lbs
Toxic (s)		500	lbs	250	lbs	62.5	lbs	1000	lbs	250	lbs	4.39	lbs	91.16	lbs
Toxic (l)		500	lbs	250	lbs	62.5	lbs	1000	lbs	250	lbs	118.84	lbs	128.99	lbs

Notes:

1. Total allowable flammable liquid chemicals is 240 gal. for Biology floor (Class 1A+Class 1B+Class 1C).
2. Total allowable flammable liquid chemicals is 60 gal. for Chemistry floor (Class 1A+Class 1B+Class 1C).
3. Combustible liquids Class IIIB and Oxidizer Class 1 (solid and liquid) are not limited in buildings equipped throughout with an automatic sprinkler system.
4. Note J: Table 307.1 (2) For gallons of liquids divide the amount in pounds by 10 in accordance with section 2703.1.2 of the International Fire Code. Corrosives, highly toxics, and toxics are included.
5. Ø - indicates container sizes much lower than limits

Table 2: Maximum Allowable Quantity (MAQ) per Control Area for Material In Use

Material	Class	MAQ Use-Closed		Adjustment for floor level				Adjustment for sprinkler				Largest container in			
				Biology		Chemistry		Biology		Chemistry		Biology		Chemistry	
Combustible (l)	II	120	gal	60	gal	15	gal	120	gal	30	gal	Ø	gal	Ø	gal
Combustible (l)	IIIA	330	gal	165	gal	41.25	gal	330	gal	82.5	gal	Ø	gal	Ø	gal
Combustible (l)	IIIB	13200	gal	6600	gal	1650	gal	13200	gal	3300	gal	Ø	gal	Ø	gal
Flammable (l)	1A	30	gal	15	gal	3.75	gal	60	gal	7.5	gal	Ø	gal	Ø	gal
Flammable (l)	1B	120	gal	60	gal	15	gal	120	gal	30	gal	Ø	gal	Ø	gal
Flammable (l)	1C	Combined w/1B													
Flammable (s)		125	lbs	62.5	lbs	15.63	lbs	125	lbs	31.25	lbs	Ø	lbs	Ø	lbs
Oxidizer (l)	4	0.25	lbs	0.125	lbs	0.03	lbs	0.25	lbs	0.0625	lbs	na	lbs	na	lbs
Oxidizer (l)	3	2	lbs	1	lbs	0.25	lbs	2	lbs	0.5	lbs	0.40	lbs	6.61	lbs
Oxidizer (l)	2	250	lbs	125	lbs	31.25	lbs	250	lbs	62.5	lbs	Ø	lbs	Ø	lbs
Oxidizer (l)	1	4000	lbs	2000	lbs	500	lbs	4000	lbs	1000	lbs	Ø	lbs	Ø	lbs
Oxidizer (s)	4	0.25	lbs	0.125	lbs	0.03	lbs	0.25	lbs	0.0625	lbs	na	lbs	1.10	lbs
Oxidizer (s)	3	2	lbs	1	lbs	0.25	lbs	2	lbs	0.5	lbs	1.10	lbs	1.00	lbs
Oxidizer (s)	2	250	lbs	125	lbs	31.25	lbs	250	lbs	62.5	lbs	Ø	lbs	Ø	lbs
Oxidizer (s)	1	4000	lbs	2000	lbs	500	lbs	4000	lbs	1000	lbs	Ø	lbs	Ø	lbs
Corrosive (s)		5000	lbs	2500	lbs	625	lbs	5000	lbs	1250	lbs	Ø	lbs	Ø	lbs
Corrosive (l)		500	gal	250	gal	62.5	gal	500	gal	125	gal	Ø	gal	Ø	gal
Highly Toxic (s)		10	lbs	5	lbs	1.25	lbs	10	lbs	2.5	lbs	0.44	lbs	1.00	lbs
Highly Toxic (l)		10	lbs	5	lbs	1.25	lbs	10	lbs	2.5	lbs	0.13	lbs	2.6	lbs
Toxic (s)		500	lbs	250	lbs	62.5	lbs	500	lbs	125	lbs	Ø	lbs	Ø	lbs
Toxic (l)		500	lbs	250	lbs	62.5	lbs	500	lbs	125	lbs	Ø	lbs	Ø	lbs

Notes:

1. Total allowable flammable liquid chemicals is 240 gal. for Biology floor (Class 1A+Class 1B+Class 1C).
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The new identity of **X-nth**

Prepared by:  Date: February 15, 2012

Jim Bilecky

Reviewed by:  Date: February 15, 2012

Lisa C. Green

TRAINING RECORD

Facility: _____

Date	**Time**	**Instructor**

Name (print)	**Signature**	**Department**	**Supervisor**