

SAN DIEGO
MESA COLLEGE



Fire Prevention Program

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PURPOSE

The purpose of the San Diego Mesa College fire safety program is to establish procedures for identifying potential fire hazards and their proper handling, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them. In the broadest sense, this plan aims at preventing fires and educating employees in proper fire protection procedures. All employees, supervisors, and personnel of the college are expected to follow the procedures outlined in this plan to ensure all individuals are protected.

AUTHORITY CITATIONS

CCR, Title 8, § [3221](#)

CCR, Title 8, § [6151](#)

DIVISION OF RESPONSIBILITIES

Occupational, Environmental Health and Safety Coordinator

The Mesa OEHS Coordinator is responsible for implementation and review of the Fire Prevention Plan, and ensures the following:

- Assist in the coordination of fire evacuation drills and fire extinguisher training.
- Managing deficiency/compliance reports forwarded from the local fire department.
- Maintain fire inspection records.

Facilities Department/Management

Is responsible for the maintenance of several systems within the plan which include:

- Setting up contractors for the maintenance of portable fire extinguishers.
- Ensuring that fire alarms, detectors and sprinklers are tested and in proper working order.
- Identifying evacuation routes and posting them within their areas of responsibilities.
- Ensure emergency phone numbers are posted on all pertinent telephones.

Dean/Supervisor/Manager

Responsible for the implementation and maintenance of this program in their respective area, including:

- Ensure fire protection policies and procedures are adhered to within their areas of responsibilities and to their employees.
- Ensuring routine inspections are completed in offices, labs, and machine shops evaluating fire safety.

- Developing and reviewing a Building Emergency Evacuation Plan.

Employees

Responsible for complying with the provisions of this program, including:

- Reporting conditions or acts which are potential fire hazards including the following:
 - Defective or inoperable emergency equipment
 - Housekeeping hazards
 - Defective heat producing equipment
 - Misuse or mishandling of hazardous materials
 - Electrical hazards

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 fire hazards and how to respond in case of a fire or fire alarm.

POTENTIAL FIRE HAZARDS

Wood products

Although most of the buildings contain large amounts of concrete and steel, many buildings contain finish materials that are wood or wood products. Doors, flooring, paneling, trim and moldings, and similar building materials are predominantly wood. Furniture, bookcases, cabinets, shelves, and similar fixtures may also contain significant amounts of wood. Paper, is probably the most common wood product found on campus, in the form of books, packaging materials, newspapers, notes, stored in files or often stacked in piles.

Factors affecting degree of hazard:

- **Physical Form**

The physical form of wood or wood products directly relates to the severity of the fire hazard of the material. Thus, the more surface area involved, the greater the fire hazard. For example, a single sheet of paper would be more susceptible to fire spread than a closed book. Similarly, sawdust or wood shavings would be more susceptible to fire spread than a solid block of wood.
- **Moisture content**

The amount of moisture in the material has an effect on the potential fire hazard of the material. Moisture absorbs heat and increases the duration of heat exposure necessary to have the material burn readily. Therefore, the drier the material the more readily it

will ignite.

- **Rate and Period of Heating**

The rate and duration of heating influence the susceptibility of wood and wood products to ignition. Remember that when a material burns it has been heated to a temperature at which combustible vapors are released and that the vapors are burning, not the material itself. For example, a steam pipe in contact with wood may ignite the wood after a long period of time, but a torch applied to wood for a short period of time may only scorch but not burn the wood despite the higher temperature of the torch flame. The time necessary to heat a material to its ignition temperature is based upon the temperature of the ignition source.

Textiles / Fibers

****NOTE: All decorative materials such as curtains, drapes, hangings, Christmas trees, or any other combustible decorative material shall be flame retardant, and no such material shall block or conceal any exit door, exit lights, fire alarm, hose cabinet or fire extinguisher. (Title 19, 3.08 & CFC 807)**

Any material or furniture must either have a manufacturer flame retardant tag or be certified that it has been treated with approved flame retardant methods!

Clothing

Many types of clothing are easily ignited. Fire hazards are increased if clothing has absorbed flammable vapors or has had flammable liquids spilled on them. Loose or dangling clothing (such as neckties or scarfs) should not be worn around open flames or other ignition sources. Many synthetic fibers are additionally hazardous in that they may melt and adhere to the skin under fire conditions.

Curtains, draperies, wall coverings and decorative materials

The use of curtains, drapes and other decorative materials are regulated closely in California. Use of such decorations should not be excessive or be comprised of materials considered extremely flammable by their size, type or arrangement.

Upholstered furniture

The materials used in furniture upholstery can contain many combinations of fibers noted above. Various standards have evolved to reduce the potential fire hazards in public buildings. Minimum flammability standards should be considered in the purchase of any upholstered furniture. The predominant hazard from this use is the toxic gases and smoke produced from smoldering fires.

Carpeting

Standards for flammability of carpeting materials used on floors and walls of buildings are designed to reduce the generation of smoke, heat, flames and toxic gases. New construction

and remodeling of existing facilities normally specify materials that are correct for the particular application.

Tents and tarpaulins

The nature of textiles used in tent- type structures creates fire hazards similar to those of drapes or wall coverings. This type of fire can quickly envelope the occupants, resulting in a high risk of loss of life.

Flammable & Combustible Liquids

Flammable liquids and combustible liquids are classified using a system that considers flash point, vapor pressure, boiling point, and anticipated ambient temperature conditions. The major groups are: Class I flammable liquids, flash point <100 ° F; Class II combustible liquids, flash point greater than or equal to 100 ° F and <140 ° F; and Class III combustible liquids, flash point greater than or equal to 140 ° F and less than or equal to 200 ° F.

Physical Properties

Many flammable and combustible liquids will float on water. This is important to remember since fighting a flammable or combustible liquid fire with water may spread the fire unless the material is water soluble. Also, because the vapors from flammable liquids are heavier than air, they will concentrate quickly at the floor. Ignition sources should therefore be eliminated in the proximity and in the areas below where flammable and combustibles are to be used before work is begun.

Quantity Limits

All facilities on campus that may involve the use of flammable or combustible liquids are allowed to store only a specified amount of a given material based upon the size, location and type of building use involved. The purpose of these limitations is to reduce the development of excess quantities that if involved in a fire or explosion could contribute to the loss of life and property. EH&S will periodically inspect all facilities on campus to assure that quantities do not exceed safe amounts.

Storage

All flammable and combustible liquids must be stored in proper containers. As the container size increases, the type of container material and other safeguards increase in safety. There are specific limits to the amounts allowed to be stored within a given building or location. Contact EH&S for an evaluation prior to increasing the quantity of flammable and combustible liquids normally used.

Dispensing

Use or transfer of flammable or combustible liquids is the time when the liberation of vapors is the greatest, increasing the risk of fire. No dispensing should occur unless it has been determined that all sources of ignition are eliminated and adequate ventilation is present.

Gravity dispensing of flammable liquids is not allowed.

Flammable Aerosol Sprays

Most aerosol sprays (WD-40, spray paint, etc.) now contain flammable propellants. These sprays should be used only in well ventilated areas and stored where they will not be exposed to temperatures greater than 120 ° F. Before using, the area should be checked to assure that there are no ignition sources present.

Flammable & Combustible Gases

Besides flammability, additional fire hazards are present for compressed and liquefied gases. In the heat of a fire, the container pressure may increase and rupture a container.

Use

All hoses, connections, manifolds, regulators, etc. should be checked initially and at regular intervals to assure that no leaks are present. Only equipment designed for use with the particular gas and for the particular application should be used.

Storage

Where possible, cylinders of flammable gasses should be secured at TWO points; at 1/3 and 2/3 the cylinder height. This will keep cylinders secure during most seismic activity. Cylinders should be stored in the upright position with the valve protection caps in place when not in use.

Reactive Chemicals

Water Reactive Materials

Water reactive materials are materials which explode, violently react, produce flammable or toxic gases, or evolve enough heat to cause self-ignition or ignition of nearby flammables or combustibles upon exposure to water or moisture. Water reactive materials include sodium metal, calcium carbide and concentrated sulfuric or oleic acid. These materials must be stored separately from flammables, and where possible, in unbreakable containers. When stored in breakable containers the materials should have secondary containment in water-tight, unbreakable containers.

Oxidizers

Although oxidizers don't usually burn themselves, they promote burning of other flammable and combustible materials. Oxidizers may promote burning sufficient as to cause explosions or fires without the introduction of ignition sources. Oxidizers include ammonium nitrate fertilizers, oxygen, nitric acid, chromic acid and perchloric acid. These materials should be stored in proper containers, avoiding locations under sinks, hoods or cabinets where plumbing,

conduit or piping may become corroded. These materials must be stored separately from flammable materials.

Pyrophorics

Pyrophoric materials spontaneously ignite in air below 130 ° F. These materials must be properly stored to prevent contact with air. Pyrophorics should also be stored in locations away from traffic areas or other places where they may be knocked over or be subject to container breakage. Secondary containment is recommended.

IGNITION SOURCES AND CONTROL MEASURES

Electrical

Electrical fires are the leading cause of industrial fires. Most electrical fires start in wiring and motors.

Control measures

- Insure that the electrical load does not exceed the circuit capacity.
- Do not use extension cords as permanent wiring.
- Insure proper maintenance of cords, plugs, outlets and switches.
- Give special attention to equipment in hazardous locations and in storage areas.

Smoking

Smoking is a potential cause of fire almost everywhere.

Control measures

- Smoking and tobacco use is strictly prohibited inside any building or in any outdoor area owned and occupied or leased and occupied by the District (District policy; AP 0505.02.)
- Smoking and tobacco use is prohibited inside any District-owned vehicle.

Hot Surfaces

Examples of hot surfaces include heat from boilers, furnaces, hot ducts and pipes, electric lamps, hot plates, and space heaters, all of which have the potential to ignite flammable and combustible material.

Control measures

- Design and maintain ample clearances.
- Insulate hot surfaces.
- Allow air circulation between hot surfaces and combustibles.

Burner Flames

Burner flames could provide an ignition source for flammable and combustible materials. Examples include portable torches, water heaters, dryers, ovens, furnaces, portable heating units and Bunsen burner flames.

Control measures

- Use tools and equipment with burner flames only for tasks which the tools or

equipment is designed and operate in accordance with manufacturer's instructions.

- Insure regular maintenance and adequate ventilation.
- Keep open flames away from flammable and combustible material.

Friction

Friction may produce large amounts of heat from hot bearings, misaligned or broken machine parts, choking or jamming of material, and poor adjustment of power drives and conveyors.

Control measures

- Insure regularly scheduled inspections, maintenance and lubrication.
- Insure prompt correction of problems noted during inspections or use.

Static Sparks

Static sparks may ignite flammable vapors, dusts and fibers by a discharge of accumulated static electricity on equipment, materials, or on the human body.

Control measures

- Insure proper grounding and bonding.
- For extreme static hazards, ionization or humidification may be used.

Overheated Materials

Abnormal process temperatures, especially resulting heating flammable liquids or combustible materials in ovens, autoclaves, heated baths and reaction vessels, have the potential to cause fires.

Control measures

- Carefully supervise and insure operators understand safe procedures.
- Temperature controls should be checked regularly and well maintained.
- In accordance with the Chemical Hygiene Plan, special safeguards should be developed for unattended heating operations, particularly overshoot cutoff devices.

Spontaneous Ignition

Oily waste and rubbish, deposits in dryers, ducts and flues, and some wastes may ignite spontaneously.

Control measures

- Insure good housekeeping and proper process operation.
- Remove waste daily, frequently clean ducts, flues and isolated storages subject to spontaneous heating.

Metal Grinding, Cutting and Welding

Potential fire hazards arise when sparks, arcs and hot metal from metal grinding, cutting and welding operations occur.

Control measures

- Using guards and exhaust systems on grinding and cutting equipment.
- Use a permit system for welding operations.
- Insure that the area is clear of combustibles before beginning work.

Molten Substances

Fires may be caused by molten metal escaping from ruptured furnaces or spilled during handling; and by glass and tempering salts.

Control measures

- Use equipment only for tasks for which the equipment is designed and operate in accordance with manufacturer's instructions.
- Insure regular maintenance.

Chemical Reaction

Fires may be caused when chemical processes get out of control, chemicals react with other materials, or unstable chemicals decompose.

Control measures

- Carefully supervise and insure personnel understand safe procedures.
- Insure that instrumentation and controls for the chemicals involved are used.
- Properly store and insure adequate separation of incompatible materials.
- In accordance with the Chemical Hygiene Plan, never change the proportions or scale of an experiment without proper authorization.

FIRE ELEMENTS AND CLASSES

Fire Elements

- In order to have a fire, there must be three elements:
 - Fuel – something which will burn
 - Heat – enough to make the fuel burn
 - Oxygen – air
- Usually these three elements are expressed as a triangle, called the Fire Triangle. All three elements must be present at the same time to have a fire. Fire will burn until one or more of the elements are removed, then it will go out.

Classes of Fire

- There are four classes of fires. All fire extinguishers are labeled, using standard symbols, for the classes of fires on which they can be used. A red slash through any of the symbols tells you the extinguisher cannot be used on that class of fire. A missing symbol tells you only that the extinguisher has not been tested for a given class of fire, but may be used if an extinguisher labeled for that class of fire is not available.
 - Class A: Ordinary combustibles such as wood, cloth, and paper.
 - Class B: Flammable liquids such as gasoline, oil, and oil-based paint.
 - Class C: Energized electrical equipment, including wiring, fuse boxes circuit breakers, machinery and appliances.
 - Class D: Combustible metals such as magnesium or sodium.
- Remember that the extinguisher must be appropriate for the type of fire being fought.

- Multipurpose fire extinguishers, labeled ABC, may be used on all three classes of fire. If you use the wrong type of extinguisher, you can endanger yourself and make the fire worse. It is also very dangerous to use water or an extinguisher labeled only for Class A fires on cooking-grease or electrical fire

FIRE PROTECTION SYSTEMS AND EQUIPMENT

Fire alarms and detection

All major buildings on the campus are provided with a fire alarm system designed to alert the building occupants of emergency conditions which include manual fire alarm pull stations located at all major exits. Areas on campus have automatic detection systems (i.e., heat detectors or smoke detectors) which are intended to provide early warning of smoke or fire conditions. Upon sensing smoke or heat conditions or the activation of a manual pull station by building occupants, the alarm systems will sound bells, horns or horn/strobe devices. Upon hearing or seeing any of these devices all building occupants should evacuate the building from the nearest exit and report to their designated assembly area. At the assembly area, details of the incident and the "all-clear" notice will be provided to evacuees by the Building Supervisor or other emergency responders. The alarm systems may only sound for 5 to 10 minutes and then stop as it may be silenced by campus police; however this does not mean you should remain in or re-enter the building, nor does it mean the problem is resolved.

Automatic sprinkler systems

Buildings are provided with automatic fire sprinkler systems, in addition to alarm systems. A fire sprinkler system is designed to automatically apply water to a fire within a building. The sprinkler heads respond to heat in immediate proximity of the ceiling above a fire. Only the sprinkler heads over the fire will open and spray water to extinguish or reduce the spread of the fire. Historically, fire sprinkler systems are over 95% effective in controlling or extinguishing small fires with less than four sprinkler heads operating.

Fire Extinguishers

The most prevalent and common fire protection devices found throughout the campus are portable fire extinguishers. All faculty and staff are annually provided the opportunity to receive hands-on training and experience in using portable fire extinguishers, as well as online fire extinguisher training. All buildings are provided with sufficient portable fire extinguishers so that the travel distance from any room or space to the nearest extinguisher does not exceed 75 feet. One should be aware of the location of the nearest two fire extinguishers within their work space. Extinguishers are required to be visually checked monthly to assure that it has not been tampered with and are readily available for use.

Maintenance and Inspection Program

The periodic maintenance and inspection frequencies for fire control measures are as follows:

<u>Fire Control Measures</u>	<u>Inspection Frequency</u>	<u>Service Firm</u>
Fire Alarm and Detection System	annual	SDCCD Alarm Department
Sprinkler System (riser control valves and water-flow alarm activation)	1 year and 5 year inspection (5 year inspection is more involved and recertifies the system)	Coordinated by SDCCD Alarm Department with various outside vendors
Fire Extinguishers	Annual (recharge) Monthly	Arranged by Facilities; current provider: Fire Hawk By individual Departments

HOUSEKEEPING

Housekeeping, the control of accumulations of flammable and combustible waste material, is crucial to fire safety:

- Facilities is responsible for the removal of trash and recyclable materials from designated receptacles located both inside and outside of buildings.
- Individual Departments, with coordination of the OEHS Coordinator, is responsible for the removal of chemical waste material in accordance with federal, state, and local regulations.

The following preventive measures should be practiced to limit fire hazards.

- Work areas (offices, labs, machine shops) should be kept clean and organized.
- Packing materials or metal scraps should be disposed of to prevent accumulation.
- Flammable solvents for cleaning should be avoided.
- Oil and chemical soaked rags should be disposed in a separate, inflammable container.
- [Smoking](#) is prohibited on all properties and in all vehicles owned or controlled by the District.
- Corridors, passageways, roadways, stairways, and any walkways leading to and from an exit must remain clear and free of any obstructions.
- A minimum clear space of 36 inches and clear access shall be maintained around sprinkler system control valves, fire alarm devices, fire ladders, fire hose stations, extinguishers, and electrical switch boxes and panels.
- Hot ashes, cinders, or smoldering coals shall be placed in non-combustible receptacles. Such receptacles, unless resting on a non-combustible floor or ground outside the building, shall be placed on non-combustible stands and at least 2 feet laterally away from any combustible material, structure, or any window opening.

- Combustible waste or refuse shall be properly stored or disposed of to prevent unsafe conditions.
- A minimum clearance of 18 inches shall be maintained between the top of stored materials and the sprinkler deflectors.
- Portable heaters shall be designed and located so that they cannot be easily overturned.

TRAINING

Upon initial assignment the Supervisor shall review the Fire Prevention Program with the employee. The employee will also be apprised of the fire hazards of the materials and processes that are in their work area. The above training will be conducted by the Dean or Supervisor.

Portable fire extinguisher training will be provided upon initial employment and at least annually thereafter. The Fire Extinguisher Safety training can be found in the Environmental section of the [Keenan SafeColleges website](#).

SAFE WORK PRACTICES – FIRE SAFETY AND PREVENTION

- Clear areas surrounding electrical outlets. Avoid spilling liquids onto electrically charged areas.
- Maintain a “clutter-free” work area. Don’t let paper or debris build up to the point where they conceal possible hazards.
- Immediately replace frayed, damaged, or exposed wires or cables throughout your work area.
- Practice safe work habits regarding the management of flammable chemicals (e.g., solvents, oils, fuels, etc.).

Be Prepared

- Know all of your escape routes **before** a fire break out. Rehearse all escape route options and educate new employees.
- Maintain clear, accessible paths to all exits at all times.
- Know where the nearest fire extinguisher is and how to use it.

What To Do When A Fire Breaks Out

- Don’t panic. Remaining as calm as possible will help you make more rational decisions, and it will also influence others to remain calm.
- Decide if you should 1) attempt to put out the fire with a fire extinguisher or 2) evacuate and summon help.

IF THE FIRE IS TOO BIG TO PUT OUT OR YOU DECIDE TO CALL FOR HELP

- **Safety is always your #1 priority.** Never risk serious injury trying to put out a fire. In general, if the fire is bigger than you are, you should evacuate and summon help.
- EVACUATE. Be familiar with the [Building Emergency Evacuation Plan](#) and follow its

instructions. When evacuating, stay low and take short breaths. Heat, smoke, and toxic gases rise. Do NOT use elevators, use stairways instead.

- Activate the nearest alarm pull station and call Campus Police or 911 (from a campus phone if possible).
- Prevent the fire from spreading by leaving doors and windows closed behind you.
- Do not re-enter a burning building unless emergency personnel have given authorization.

Fire Extinguishers

Know where fire extinguishers are located in your work area so that you don't have to look for them in an emergency situation. Every fire extinguisher should have an inspection tag affixed with an inspection date less than one year old. In addition, the needle on the pressure gauge should be in the green area. If there is a problem with the fire extinguisher(s) in your work area, notify maintenance immediately.

Fire extinguishers are effective in putting out small fires when used properly. It is critical to understand how to operate them and what type to use on different types of fires.

How to Operate a Fire Extinguisher

Remember the acronym, P.A.S.S.

Pull the pin

Aim the extinguisher nozzle at the base of the fire

Squeeze the trigger while holding upright

Sweep the extinguisher from side to side, covering the base of the fire until it is put out

APPENDIX A – DEFINITIONS

- Flash point: the lowest temperature of a liquid at which its vapor is given off in sufficient quantities so that the vapor/air mixture above the surface of the liquid will propagate a flame when exposed to a source of ignition.
- Combustible liquid: a liquid having a flash point at or above 100° Fahrenheit (F). A Class II liquid includes those having flash points at or above 100° F and below 140° F.
- Flammable liquid: a liquid having a flash point below 100° F is classified as a Class I liquid