

California Institute of Technology

FIRE PREVENTION PROGRAM



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SCOPE

The purpose of the Fire Prevention Program is to ensure fire prevention is a functional process for eliminating hazards from the workplace in compliance with [California Code of Regulations \(CCR\), Title 8, § 3221](#). It provides faculty, staff, and students with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards.

This Program applies to all personnel of the Institute. Outside contractors will be expected to comply with Caltech's [Construction Safety Guide](#) as well as sound fire prevention techniques and methods during their contracted jobs.

RESPONSIBILITIES

The Executive Director for Planning, Design and Construction is responsible for the identification and installation of fire detection and fire suppression systems for new construction and existing facilities' renovation projects.

The Assistant Vice President for Facilities Operations and Services is responsible for the following:

- a. Inspection and maintenance of fire suppression and detection systems installed to prevent or control ignitions of fires; and
- b. Installation, recurring monthly inspection and annual certification, and maintenance or replacement of fire extinguishers.

The Director of Buildings and Grounds is responsible for the control of accumulation of combustible waste materials in buildings.

The Division Chairs and Division Operating Officers are responsible for controlling the accumulation of flammable and combustible materials and wastes in their respective laboratories.

POTENTIAL FIRE HAZARDS AND THEIR PROPER STORAGE AND HANDLING PROCEDURES

Electrical Fire Hazards

To prevent electrical fires, employees shall:

- Make sure worn wires, plugs, or cords are replaced.
- Never use extension cords as substitutes for permanent wiring.
- Use only approved power strips or surge protectors [i.e., those with the Underwriters Laboratory (UL) or FM Global (FM) label].
- Don't overload power strips or surge protectors with high drawing current electrical devices.
- Never "gang" or "daisy chain" multiple power strips or surge protectors.
- Never break off a third prong (Ground Pin) on a plug to plug it into a two-pronged outlet.
- Always disconnect an electrical plug by pulling the plug not the cord.
- Check wiring in hazardous locations where the risk of fire is especially high.
- Check electrical equipment to ensure that it is either properly grounded or double insulated.

Portable Heaters

Portable electrical heaters shall have tip-over protection that automatically shuts off the unit when it is tipped over. Adequate clearance between the heater and combustible furnishings

or other materials shall be maintained at all times. Do not overload power strips or surge protectors with multiple portable heaters.

Office Fire Hazards

- Avoid overloading circuits with office equipment.
- Turn off nonessential electrical equipment at the end of each workday.
- Keep storage areas clear of rubbish.
- Ensure that power strips or surge protectors are not placed under carpets or rugs.

Cutting, Welding, and Open Flame Work

- All necessary hot work permits have been obtained and fire watches established prior to starting any work.
- Cutting or welding is prohibited in sprinklered areas while sprinkler protection is out of service.
- Cutting and welding are done in designated areas whenever possible by authorized personnel.
- Adequate ventilation is provided.
- Torches, regulators, pressure-reducing valves, and manifolds are Underwriters Laboratory (UL) or FM Global (FM) approved.
- Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure relief devices.
- Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapors or dusts could develop in confined spaces.

Flammable and Combustible Material

Class A Combustibles

These include common combustible material (wood, paper, cloth, and some plastics) that can act as fuel. To handle Class A combustibles safely:

- Keep trash in receptacles.
- Dispose of waste in a timely manner.
- Keep work areas clean.
- Keep combustibles away from potential ignition sources.
- Store oily rags in metal bins with lids.
- Do not store excessive amounts of combustibles.

Class B Flammables or Combustibles

These include flammable and combustible liquids (oils, greases, and lacquers), flammable gases, and flammable aerosols. To handle Class B flammables and combustibles safely:

- Use only approved pumps to dispense liquids from tanks, barrels, drums, or similar containers.
- Do not dispense flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire and either the container or nozzle is grounded.
- Store, handle, and use Class B flammables only in approved locations where vapors are prevented from reaching ignition sources, such as heating or electric equipment, open flames, or mechanical or electric sparks.
- Five gallons or more of a Class B flammable must be stored in a flammable liquid storage cabinet equipped with a self-closing mechanism.

- Store materials such as oxidizers and organic peroxides in an area separate from flammable liquids and gases.
- Do not use, handle, or store Class B flammables or combustibles near exits or stairwells.
- Do not weld, cut, grind, or use unsafe electrical equipment near Class B flammables.
- Do not generate heat or allow an open flame near Class B flammables.

POTENTIAL SOURCES OF IGNITION

Ignition Source	Control Procedures
Brazing & Welding	Control procedures are outlined in Caltech's Hot Work Permit Program .
Electrical	Control procedures are outlined in Caltech's Electrical Safety Program for Campus Facilities .
Smoking	Adopted and posted signage for Pasadena Municipal Code (PMC) 8.78.070 and 8.78.072 .

HOUSEKEEPING PRACTICES

The following practices are used to control accumulations of flammable and combustible materials and wastes at the Institute:

Type of Fire Hazard	Fire Prevention Practices
Flammable and Combustible Liquids	- Laboratory Fire Prevention Practices are outlined in the Chemical Hygiene Plan . - Inspections are conducted under the Injury and Illness Prevention Program .
Flammable Gases	- Laboratory Fire Prevention Practices are outlined in the Chemical Hygiene Plan . - Inspections are conducted under the Injury and Illness Prevention Program .
Paper	- Office trashcans are emptied twice a week.
Plastic	- Recycling cans are emptied on a weekly basis.

FIRE PROTECTION SYSTEMS

Fire Protection Maintenance and Inspection Frequencies

The Assistant Vice President for Facilities Operations and Services is responsible for the annual, semi-annual, and five-year testing of the Institute's fire suppression and detection systems. These systems include:

- Fire sprinkler systems (wet, dry, pre-action, deluge, and gaseous extinguishing agents)
- Heat, smoke, and infrared detection systems.

The Assistant Vice President for Facilities Operations and Services is also responsible for the monthly fire extinguisher inspections and the annual servicing of fire extinguishers.

FIRE EVACUATION NOTIFICATION AND PROCEDURES

In the event of a fire, the building fire detection system will activate and put the building into alarm. Upon hearing the alarm, building occupants will evacuate and proceed to the buildings Emergency Assembly Area to await further instructions.

If the building does not have a fire detection system, employees should evacuate the building, notify Security at extension 5000, and proceed to the Emergency Assembly Area and await further instructions.

TRAINING

Supervisors will ensure that their employees have been trained about fire hazards associated with the materials and processes in the Fire Prevention Program and will maintain or submit for retention documentation of their training. Employee training will include the following:

- The elements of this Fire Prevention Plan.
- Good housekeeping practices.
- Proper response and notification in the event of a fire.
- Evacuation procedures.

PROGRAM REVIEW

This program shall be reviewed annually or as necessary.