

California Institute of Technology

FIRE PREVENTION PROGRAM



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SCOPE

The California Institute of Technology (Caltech) recognizes that campus fire safety is vitally important to the Campus community, and thus is committed to maintaining a safe environment for all students, faculty, postdoctoral scholars, staff, and visitors, and to comply with all applicable laws, regulations, codes, and standards regarding fires, fire safety, and fire protection.

The Caltech Fire Prevention Program describes the roles and responsibilities, and the processes in place to ensure adequate fire prevention and the elimination of various fire hazards in compliance with California Code of Regulations (CCR), Title 8, § 3221, the California Fire Code, and CCR Title 19, Division 1. It provides campus constituents with information and procedures that will assist them in recognizing, reporting, and controlling fire hazards.

ROLES AND RESPONSIBILITIES

Facilities

The Executive Director for Planning, Design and Construction is responsible for the following:

- Identification and installation of fire detection and fire suppression systems for new construction and existing facilities' renovation projects in accordance with fire and building codes.
- Workplace and fire safety for Caltech construction activities.
- Ensures that safe construction practice is in place, that projects implement code complaint installations as reviewed by local authorities and oversee the permitting process for construction projects.
- This oversight also includes ensuring that contractors have appropriate and compliant safety programs in place and that they are implementing the approved safety plans.

The Director of Infrastructure and Maintenance is responsible for the following:

- Inspection and maintenance of fire suppression and detection systems installed to prevent or control ignitions of fires.
- Installation, recurring monthly inspection and annual certification, and maintenance or replacement of fire extinguishers.
- Annual, semi-annual, and five-year testing of the Institute's fire suppression and detection systems. These systems include but are not limited to:
 - Fire sprinkler systems (wet, dry, pre-action, deluge, and gaseous extinguishing agents).
 - Heat, smoke, and infrared detection systems.
 - Annual servicing of fire extinguishers.
 - Monthly fire extinguisher inspections.
 - This includes ensuring the submittals of necessary documentation to the local Fire Department (BRYCER).
- Assists in evacuation drills.

The Director of Buildings and Grounds is responsible for the following:

- Control of accumulation of combustible waste materials in buildings.

Division Chairs and Division Operating Officers

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

Student Affairs

The Dean of Students, Finance and Operations from the Student Affairs Administration is responsible for enforcing fire safety procedures in areas under their respective control. This includes coordinating safety inspections with the Environmental Health and Safety Office (EH&S), correcting violations, scheduling fire safety training and evacuation drills, and implementing fire prevention and evacuation plans.

The Executive Director for Student Auxiliary Services, in conjunction with EH&S, ensures that the student living areas are a safe environment, and coordinates required fire safety and evacuation drills with EH&S.

Students

Students are responsible for familiarizing themselves with the Caltech Fire Prevention Program and complying with all Caltech fire safety procedures and applicable laws. Furthermore, students are responsible for reporting fire hazards to EH&S, Security, Student Affairs or the Housing Office. Students are encouraged to take an active role in furthering fire safety in their residences.

Campus Security and Parking Services Office ("Security")

[Security](#) is responsible for responding to all fire safety alarms and emergency calls involving fire safety. Security personnel activates and coordinates with Pasadena Fire Department for on campus response. Security personnel also monitor fire detection and suppression alarms. Security completes fire incident notifications, including "false" fire alarms. Security also assists in the implementation and participation of all Fire and Evacuation Drills on campus.

Environmental Health & Safety Office ("EH&S or Safety Office")

The [Safety Office](#) is responsible for the following:

- Program oversight: This program shall be reviewed annually or as necessary.
- Conducting periodic walkthroughs of labs and student housing to identify fire/life safety issues.
- Assisting in timely correction of fire code deficiencies or unsafe conditions.
- Providing guidance in the design of fire suppression, detection, and alarm systems.
- Investigating fire incidents to determine root cause and follows-up with fire safety recommendations.
- Providing fire safety training for students (including fire extinguisher and evacuation training) and other groups when requested.
- Assisting Caltech's insurance carrier and the Institute Risk Manager and acts as their contact with the local fire department.
- Acting as liaison to the Pasadena Fire Department and escort the agency during their inspections of Caltech.

In the case of hazards that pose an immediate risk to life safety, Security, EH&S, Student Affairs, Housing, and/or Facilities personnel may take corrective action immediately.

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].
- Do not 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

The use of portable heaters is not recommended, Facilities can be contacted to modify temperature settings in Caltech buildings.

Portable propane heaters (as used at the Athenaeum or special events*) shall adhere to the following guidelines:

- Liquefied petroleum gas (LPG) cylinders must only be used with listed and approved appliances/heaters.
- All covers for LPG cylinders on heaters must be locked and protected from tampering.
- All LPG cylinders must be a minimum of 10 feet from combustible trash, materials, and vegetation.
- There is no smoking permitted within 25 feet of LPG cylinders stored or in use.
- Cylinders and storage areas must be protected from vehicular traffic.
- Must have a currently serviced, minimum size 2A 20BC fire extinguisher within 75 feet of travel distance from all propane heaters and propane storage areas.
- All heaters must be a minimum of 5 feet from all buildings, exits, public ways, and lot lines.
- All heaters used must have an approved “tip-over” switch that automatically shuts off the flow of gas if the appliance is tilted more than 15 degrees (0.26 rad) from the vertical.
- Replacement of LPG cylinders must never be conducted while the public is present.
- Propane heaters are prohibited for use inside tents and on balconies.

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.

*Lead event coordinators must ensure that these guidelines are in place for their respective events.

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	Control procedures: smoking is prohibited in or around the Premises (Ord. 8.78.085- Reduction of drifting tobacco smoke in multi-unit housing). Adopted and posted signage for Pasadena Municipal Code (PMC) 8.78.070 and 8.78.072.

HOUSEKEEPING PRACTICES

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 (IIPP) .
Flammable Gases	- Laboratory Fire Prevention Practices are outlined in the Chemical Hygiene Plan . - Inspections are conducted under the Injury and Illness Prevention Program (IIPP) .
Paper	- Office trash cans are emptied twice a week.
Plastic	- Recycling cans are emptied on a weekly basis.

FIRE SAFETY PROCEDURES SPECIFIC TO STUDENT HOUSING

Barbecues/Grilling

Only Caltech Dining Services (CDS) and Student Housing approved and provided propane grills are allowed on student housing premises. All other barbecues or grills are prohibited. Propane will be provided by CDS and will be removed and stored at approved locations within CDS facilities as allowed by the California Fire Code. Dining Services will provide storage for propane tanks at the Browne cage dock. Grills may only be used for events sanctioned by CDS and/or the Office of Student Experience (OSE).

Bonfires

Bonfires are strictly prohibited on campus.

Candles

Candles and any other open flame items are strictly prohibited in campus housing.

Decorations

Decorations such as fishnets, parachutes, and fabrics are a source of fuel and can spread a fire. Old newspapers, cardboard boxes and magazines can also accelerate a fire. Particular attention should be given to decorations for special occasions.

- Students should minimize the amount of combustible materials that are used in the residences.
- Decorations must not cover, block, or hide exit signs, lights, and/or fire safety equipment.
- Combustible materials used for events must have an approved State of California fire retardant applied to the material prior to use.
- Fresh cut Christmas trees must be treated with approved State of California fire retardant and artificial trees must be labeled as made of non-combustible material. Fresh cut Christmas trees must be taken down and disposed of within one week following Christmas.

Any fire safety equipment including, but not limited to exit signs, smoke detectors, pull stations, fire sprinklers, must not be painted over, covered at any time, or tampered with.

Electrical Appliances

All equipment utilized (lights, halogen lights, wires, plugs, connections, etc.) must be Underwriters Laboratories (UL) or FM Global (FM) approved and in good condition. Pole or torchiere halogen lamps are not permitted. The use of improvised wiring and multi-outlet adapters (i.e., adapters that allow two or more appliances to be plugged into one outlet) are prohibited. Extension cords are not

allowed but surge protectors or power strips are allowed as long as they are not ganged or joined together. Electrical cooking appliances such as coffee pots and hot plates and other cooking appliances must be used only in kitchen areas and must be attended at all times while in use.

Explosives and Improvised Explosive Devices

Explosives, including fireworks, are extremely hazardous. Possession and use of either manufactured or improvised explosives in residences or living quarters is strictly prohibited. Use and storage of explosives is strictly controlled by local, state, and federal laws and except for a few specific research labs, are not allowed on campus. Misuse of chemicals and stockroom privileges is a serious matter and research material must never be used or stored in residences.

Fireworks of any kind are strictly prohibited by the [City of Pasadena](#) (exception: fireworks are allowed by an approved permit issued by the City of Pasadena). The Bureau of Alcohol, Tobacco, and Firearms (BATF) regulates types of explosives from fireworks to dynamite. See the latest list of [Explosive Materials](#).

Flammable Liquids and Gases

Flammable liquids and gases may not be used or stored in student housing facilities (unless expressly approved by Housing, OSE, and EH&S). Examples include but are not limited to: gasoline, acetone, camping stove fuel (white gas or butane), lighter fuel, propane torch canisters, aerosol spray cans (paint), and may also include flammable gases.

Flammable liquids and gases pose a particular hazard when stored or used in living areas. The hazard is typically created by the evaporation of fuels or solvents in confined spaces, mixing with air to form a flammable region, and ignition by open flame pilot lamps, stove, cigarette lighter, or faulty wiring. Certain household combustibles such as hair spray and nail polish are exempt from this requirement and may be possessed by students/residents in their living areas.

Mopeds and motorcycles must not be stored inside residences since the gas shut-off valves can leak or not be properly secured, creating a flammable vapor hazard.

Students/residents will be able to store these materials for personal use as approved through the Chemicals Storage Program as administered by EH&S.

Electronic Cigarettes

Caltech prohibits the use, possession, and storage of electronic cigarettes in all Caltech Housing locations.

Fire Alarms

It is a violation of Campus rules and procedures to intentionally set off a false fire alarm. Actions such as setting off a false fire alarm, tampering with a smoke detector, disabling a fire alarm, discharging a fire extinguisher, or suppressing a warning device are illegal and may result in criminal penalties as well as campus disciplinary actions.

Fire Doors

Fire doors must not be tampered with and must be kept closed at all times.

Fire Drills and Evacuation Procedures

Students must understand and conform to all Caltech procedures for fire drills and evacuation procedures. These procedures can be found on the back of each student residence room door.

When a fire alarm is sounded, all individuals in the building must exit promptly to their designated Emergency Assembly Area and must fully cooperate with any responding emergency personnel.

Hallways and Walkways

Hallways, walkways, exit corridors, staircases, doors, and passageways leading to exits must be kept clear of all items that may obstruct the hallway or impede evacuation. The Safety Office, Housing, Security, and Facilities reserve the right to remove any combustible materials or items that may impede normal passage or evacuation routes.

Electronic Mobility Devices

Caltech prohibits the storage of electronic mobility devices (EMDs) in all student housing facilities and residential areas. Electronic mobility devices may include: e-bikes, electric scooters, hoverboards, etc. Please refer to [Caltech's Guidelines to EMD and lithium-ion battery safety](#).

Exception: EMD's for accessibility.

Indoor Fireplaces

Fireplace use with wood, gas or any other material is strictly prohibited. Fireplace screens must not be removed.

Open Burnings

No open burnings shall be allowed on Caltech property.

Outdoor fireplaces

Outdoor fireplaces are not permitted on Caltech property.

Smoking

NO SMOKING POLICY

Resident will not smoke in or around the Premises and agrees to keep the premises smoke free at all times (including use of e-cigarettes). (Ord. 8.78.085- Reduction of drifting tobacco smoke in multi-unit housing- <http://library.municode.com/index.aspx?clientId=16551>.)

Sanctions

Violations of this Program and procedures may result in investigation and disciplinary action by any of the following, including but not limited to: the Housing Office, the Conduct Review Committee, the Dean of Students, the Vice President for Student Affairs, the Dean of Graduate Studies, or the Graduate Review Board.

In addition, the setting of a fire or tampering with fire safety equipment a violation that will result in a fine of up to \$500 for each person involved, in addition to reimbursements for damage and/or fines levied against the responsible house. Further violations will result in eviction from Caltech Housing. In the event of a violation of law, state and federal authorities may also take action.

FIRE PROTECTION SYSTEMS

Fire Protection Maintenance and Inspection Frequencies

All Fire Protection Systems are tested and inspected at the following frequencies:

- Fire sprinkler systems
 - 5-year and 10-year inspections
 - Annual testing
 - Monthly inspections
- Special suppression systems (including kitchen suppression systems and dry-chemical systems) – semi-annually
- Heat, smoke, and infrared detection systems – annually
- Fire Alarm Systems – tested annually
- Portable fire extinguishers
 - Inspected monthly
 - Certified annually

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 or (626) 395-5000, and proceed to the Emergency Assembly Area to await further instructions.

EMPLOYEE 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.

EVALUATION OF PROGRAM

This program will undergo annual evaluation to ensure its procedures and processes align with current Fire and Health and Safety Codes and accurately reflect the Institute's standards.