

Welding and Flame Cutting Operations Fire Prevention and Suppression Procedures

If not properly controlled, welding and flame cutting operations present serious fire hazards that can lead to significant damage and/or loss of life. To ensure safety on campus and to comply with Cal/OSHA requirements for such operations, the University of California, Berkeley (UC Berkeley), has established standard procedures that apply on all UC Berkeley property.

Supervisors of welding or flame cutting operations must designate approved fire safe areas (such as shops) in which this work is to be routinely conducted. Such areas must be maintained free of combustibles and must be equipped with both portable fire extinguishers and fire alarm systems. Those performing the work, as well as the fire watcher, must be current in annual fire extinguisher use training. Work performed within such designated areas does not require a job-specific welding-cutting permit.

When welding or cutting must be performed outside these designated areas, the work must be performed in accordance with the procedures outlined below. A Welding/Cutting Permit (Attachment 1), signed by a supervisor, is also necessary.

I. A departmental supervisor must:

- Inspect and approve the area and all equipment to be used (e.g., torches, manifolds, acetylene generators, and regulators or pressure-reducing valves) before welding or cutting is permitted. Determine if combustibles are present or likely to be present in the work location, making it a hazardous area. If combustibles may be present, the supervisor must relocate the work to another area, have the combustibles moved to a safe distance from the work (at least 35 feet away), or shield the combustibles from ignition sources.
- Ensure that all cutters, welders, and their supervisors (including contractors) are trained in the safe operation of their equipment and the use of fire extinguishers in standard UC Berkeley fire prevention procedures.
- Alert all affected employees and contractors to the presence of flammable materials or other hazardous conditions in case they are not aware of them.
- Ensure that emergency communications systems, fire alarms, and extinguishers are functional and readily available at the site. When smoke generation may set off fire detection systems, arrange for Physical Plant Campus Services to temporarily disable the system and provide an alternate means of alerting others to a fire.

Work performed
in shops and
other designated
areas

Work performed
outside designated
areas

- Complete, sign, and post a Welding/Cutting Permit (Attachment 1), noting all precautions required for maintaining the area fire safe.

II. The lead employee (including contractor supervisors) who conducts welding or flame cutting operations must:

- Be responsible for the safe handling of the welding and/or cutting in accordance with these safety procedures and all precautions listed on the Welding/Cutting Permit.
- Wear, and ensure that other employees wear, all required personal protective equipment, including the proper welding/cutting eye protection and burn-resistant clothing such as welding leathers.
- Stop work and inform supervisor if conditions change.

III. A Fire Watcher is required in locations where welding or flame cutting might cause anything other than a minor fire or whenever combustible material must remain closer than 35 feet to the operation. (This can include wall or floor openings within a 35-foot radius that may expose combustible material in adjacent areas and metal partitions, walls, ceilings, or roofs where adjacent combustible material may be ignited by heat conduction or radiation.)

Fire Watchers must:

- Must be trained to safely use a fire extinguisher (annually).
- Have a minimum 2A20BC-rated fire extinguisher or charged water hose located within 30 feet of the hot work location.
- Know how to sound the fire alarm.
- Watch for fires in all exposed areas and try to extinguish them only when it is obviously within the capacity of the available equipment; otherwise the Fire Watcher should sound the alarm.
- Maintain fire watch for at least one-half hour after completion of the welding or flame cutting operations.

For questions regarding these procedures or to arrange for training, contact the Office of Environment, Health, and Safety at 642-3073.



UC Berkeley Welding/Cutting Permit



MUST BE POSTED ON SITE

- All equipment to be used for welding or cutting has been inspected and approved.
- All personnel (including supervisors) are trained in applicable safety precautions and procedures.
- Employees and contractors have been advised of any flammable materials or other hazardous conditions in the area.
- Fire alarms and extinguishers are available at the site. When fire alarms have had to be disabled because of anticipated smoke, an alternate means of summoning help is on site.
- The following personal protective equipment will be used: (check all that apply)
 - Welding Helmet Nomex Coveralls Air Purifying Respirator
 - Cutting Lenses Welding Leathers Other _____
 - Safety Glasses & Face Shield Long Sleeve Shirt Other _____
 - Leather Gloves Other _____
- The area is or has been made firesafe by: (check "Yes" or "Not Applicable")
 - Yes N/A
The area is free of combustible and flammable contents. (Combustibles—including papers and wood shavings on the floors—have been removed to a distance of 35 feet or more from hot work.)
 - Yes N/A
Combustibles that cannot be removed at least 35 feet are protected from ignition sources with flame-proof covers or shielded with suitable guards or curtains.
 - Yes N/A
Tanks, vessels, and other enclosed areas for flammable vapors and gases have been tested (<10% LEL).
 - Yes N/A
Combustible floors must be kept wet, covered with damp sand, or protected by fire-resistant shields. (Where floors have been wet down, personnel operating arc welding or cutting equipment must be protected from possible shock.)
 - Yes N/A
Cracks or openings in walls, doorways, windows, or floors are closed or covered, or they are protected with guards or shields.
 - Yes N/A
When cutting or welding is done near walls, partitions, ceiling, or roof of a combustible construction, fire-resistant shields or guards are provided to prevent ignition.
 - Yes N/A
If welding is to be done on a metal wall, partition, ceiling, or roof, combustibles on the other side are removed, or a Fire Watcher is on duty.
 - Yes N/A
Ducts and conveyor systems that might carry sparks to distant combustibles are suitably protected or shut down.
 - Yes N/A
A Fire Watcher is on duty. (Applies whenever all combustibles cannot be removed at least 35 feet.)

Requirements for Fire Watchers:

- ✓ Fire Watchers must be trained in the use of fire extinguishing equipment.
- ✓ Fire Watchers must be familiar with facilities for sounding an alarm in the event of a fire.
- ✓ Fire Watchers must watch for fires in all exposed areas and try to extinguish them only when it is obviously within the capacity of the equipment available; otherwise the Fire Watcher should sound the alarm.

A fire watch must be maintained for at least one-half hour after completion of welding or cutting operations.

Designated Fire Watcher (Signature)

Date

Describe Area Covered by Permit: _____

I have inspected the area, found all applicable fire prevention controls to be in place, and hereby approve cutting and/or welding in this area, as long as the above-listed conditions do not change.

Authorizing Supervisor (Signature)

Date

