
Hot Work Program



DARTMOUTH

EHS Approved By:	<i>Annette Chism, Sr. Director</i>	Revision date:	08/05/2026
Original Program Date:	03/31/04	Revision #	3

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Section 1 - Scope

This program includes all aspects of a Hot Work Program described in 29 CFR 1910.252, 29 CFR 1926.352, NFPA Code 51B, and by Factory Mutual (FM) Insurance Company "Hot Work Guidelines." The procedures contained in this Program apply to all employees (including student employees), property managers, and outside contractors working at Dartmouth College. The Department of Environmental Health and Safety provides oversight for this Program.

Section 2 - Purpose

To provide written procedures to prevent the outbreak of fire, fire alarm activations, and smoke and odor migration in buildings resulting from any temporary operation involving open flames or producing heat and/or sparks.

This includes, but is not limited to, brazing, cutting, grinding, torch soldering, thawing pipes, torch-applied roofing, and welding.

Section 3 - Definitions

Fire Watch – A trained individual stationed in the hot work area who monitors the work area for the beginnings of potential, unwanted fires both during and after hot work. Individuals must be trained and familiar with the operation of portable fire extinguishers and methods to activate building fire alarm systems.

Hot Work – Any operation producing flame, sparks, or heat, including cutting, welding, brazing, grinding, sawing, torch soldering, thawing frozen pipes, applying roof covering, etc.

Hot Work Permit – A special permit that authorizes “Hot Work” activities at a specific location and time. The permit will be properly filled out including the completed fire watch and monitoring periods, displayed on site, and returned to the employee’s supervisor when the hot work is complete. Permits contain a checklist to be completed prior to commencing hot work activities and at the conclusion of the hot work.

Section 4 - Roles and Responsibilities

The Hot Work Program roles and responsibilities are identified and delineated in this section. The success of the Hot Work Program relies on and charges Dartmouth employees and Contractors to adhere to, follow, and provide full support of this Program.

4.1 Environmental Health and Safety (EHS)

- Develop, implement, and maintain an OSHA-compliant Hot Work Program.
- Provide Hot Work procedures training for employees.
- Periodically audit operations, documentation, and training records.

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4.2 Facility Managers, Department Heads, and/or Supervisors

- Provide management commitment and operations support for successfully implementing and maintaining the Hot Work Program.
- Implement the Hot Work Program and provide the necessary tools for adherence to the Program.
- Identify employees who may perform hot work as defined in the Program.
- Ensure employee participation in hot work training.
- Collect and review Hot Work Permits and send them to EHS at the end of each month.
- Ensure employee compliance with procedures.

4.3 Employees

- Attend hot work training.
- Be thoroughly familiar with Hot Work procedures.
- Adhere to all hot work procedures.
- Complete Hot Work Permit.
- Provide a four-hour fire watch as outlined in Section 7.

4.4 Contractors

Contractors shall always comply with OSHA 29 CFR 1910.252 and 1926.352 requirements through their construction contracts.

- Responsible for ensuring their employees and subcontractors are adequately trained in all aspects of conducting Hot Work safely, including individual completion of approved Hot Work Training.
- Contractors shall utilize their own internal hot work permit process.
- Ensure a fire watch is always present before beginning the Hot Work and provide a four-hour fire watch in compliance with Section 7 of this Dartmouth College Hot Work Policy.
- Fire watches shall be continuously maintained for one hour after work is complete. This must be documented on the Hot Work Permit with signature, date, and time.
- Fire watch shall be periodically maintained for three hours after completing the initial one hour. This must be documented after each hour on the Hot Work Permit with signature, date and time.
- Provide completed Hot Work Permits to the Project Manager or facility manager after the project/work is complete.

Section 5 – Hot Work Operational Requirements

Hot work should not be performed if it can be avoided or performed more safely.

When practical, welded, cut, or heated objects should be moved to a designated safe location, e.g., a maintenance shop. A hot work permit is required for any temporary operation involving open flames, or that produces heat and/or sparks, conducted outside of a specifically designated, permanently fire-safe area. If hot work is required, a Hot Work Permit must be completed.

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Fire-safe areas of Dartmouth Facilities include:

- FO&M Welding Shop located behind McKenzie Hall.
- The Heat Plant welding shop.
- The sculpture studio welding shop located inside the Black Family Arts Sculpture Studio.
- The plasma cutting table / welding area located inside the Thayer School of Engineering Machine Shop
- The mechanics bay located in the FO&M building on Dewey Field Rd.
- The mechanics bay welding area in the Hanover Country Club Maintenance Facility on Lyme Rd.
- The welding area located in the Wilder Machine Shop.
- Fixed location bench-top grinding stations located in building shop areas.
- Other areas as approved by Environmental Health & Safety.

All pre-authorized fire-safe areas shall be inspected annually by the EHS Fire Safety Officer. The Fire Safety Officer may also authorize new fire-safe areas after inspection.

In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or All precautions on the Hot Work Permit must be met before any work commences. The supervisor or the employee performing the hot work will complete the permit.

Hot work is not permitted:

- In areas not authorized by management including the Project Manager, Contract Supervisor, or Workplace Supervisor.
- In sprinklered buildings while such protection is impaired.
- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

The Hot Work Permit is only suitable for the date(s) specified on the permit.

The Hot Work Permit must be displayed at the site during all hot work activities.

All building occupants must be suitably protected against hazards generated by the work, such as protection from heat, sparks, fumes, welding rays, etc.

5.1 Before Hot Work Begins:

- An appropriate and operable fire extinguisher must be available on site with trained Fire Watch personnel.
- Workers and Fire Watch personnel are trained to use fire extinguishing equipment and sound a fire alarm.
- Flammable and ignitable materials and debris must be moved at least 35 feet from the hot work area or covered and protected from the hot work by a fire-resistant material that complies with

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OSHA and NFPA 51B Standards For a material to be officially "hot work approved" under [OSHA](#) and [NFPA 51B](#) standards, it must meet specific criteria:

- Must be non-combustible or self-extinguishing.
- Should not emit toxic smoke or significant off-gassing when exposed to direct sparks or flame.
- Blankets covering vertical drops must be long enough to reach the floor and seal off any gaps where sparks could travel.
- Explosives, compressed gas cylinders, or stored fuel must be moved at least 50 feet from the hot work area or covered and protected from the hot work by fire-resistant material.
- Smoke and fire detectors in the immediate area of the hot work must be temporarily disabled until the hot work is completed.
- Fire protection systems in the hot work area must be in service, if provided (e.g., automatic sprinklers).
- Verify there are no active or planned fire protection system impairments near the hot work area during the work or during the post-work fire watch monitoring periods.
- Adequate ventilation is used (especially when cutting or welding materials with painted or metal-coated surfaces). A building's HVAC system does not qualify as ventilation for a work area.
- Building occupants have been protected or isolated from the hot work area.
- Cracks or holes in floors, walls, and ceilings (including ductwork) are properly covered or plugged.
- Hot work equipment is operable and in good repair.
- Drums, barrels, and tanks have been cleaned and purged of flammables and toxics, all tank feeds are closed, and the tank is vented.

5.2 When Hot Work is Complete:

- The work area and any potentially affected surrounding areas are inspected for fire, fire damage, or the potential for fire for a minimum of 60 continuous minutes following completion of the hot work.
- Fire watch shall be periodically maintained at least once per hour for three hours after completing the initial one hour continuous fire watch.
- Verify and ensure all smoke/fire alarms disabled because of hot work are reactivated and the fire alarm system is functional with no trouble or supervisory warnings indicated on the fire alarm control panel.
- Hot Work Permit is closed out.
- The completed permit is returned to the worker's supervisor, who then submits the completed permit to the Environmental Health and Safety Office.

Section 6 - Employee Training

All employees involved with hot work must be trained to ensure their knowledge, understanding, and skills necessary for the safe performance of their duties. Training describes the necessary measures and precautions that must be taken when conducting hot work. Employee training records showing

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the training date, employee attendance, and the name and signature of the instructor(s) will be maintained by EHS.

6.1 Training Includes

The hot work training must include the following (but is not limited to):

- Definition of hot work.
- Definition of Hot Work Permit.
- Dartmouth's Hot Work Program.
 - Activities that produce heat or sparks, such as welding, cutting, and brazing.
- Safe work practices.
- Identifying hazards:
 - An understanding of the potential risks involved in hot work environments.
- Safety precautions:
 - An understanding of the necessary precautions to prevent fires and injuries.
- Roles and responsibilities:
 - An understanding of the duties of workers, supervisors, and fire watchers during hot work operations.
- Emergency preparedness:
 - An understanding of how to be prepared for emergencies and respond effectively.

6.2 Training Frequency Initial/Re-training

Initial training is required for each employee involved in hot work operations before they are assigned hot work duties.

Supervisors are responsible for ensuring employees attend hot work re-training whenever one of the following situations occurs:

- Whenever there is a modification to the Hot Work Program, Hot Work Permit, or employee duties.
- If a review finds inadequacies in the Hot Work Program, all affected employees will be informed of changes.
- There is a change in hot work operations that presents a hazard in which an employee has not been previously trained.
- If the employer has reason to believe that proper hot work procedures are not being followed.
- A supervisor has reason to believe an employee's knowledge or use of these procedures and plans is inadequate.
- If changes in the OSHA rule occur.

Annual refresher training is required for employees who perform hot work or are designated as a fire watch.

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Section 7 – Fire Watch

A fire watch is defined as a person or persons who are responsible for standing by during hot work operations to prevent unwanted ignition or heating of materials. Where applicable, more than one fire watch may be required due to work involving multiple areas and/or levels. The fire watch will have a serviceable fire extinguisher nearby and immediately stop work in the event of unwanted ignition. A fire watch is required for any job requiring a permit and whenever welding or cutting is performed in locations where any of the following conditions exist:

7.1 Fire Watch Required

- Appreciable combustible materials, ignitable by sparks or slag, are closer than 35 feet to the point of operation.
- Wall or floor openings within a 35-foot radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

7.2 Personnel Performing Fire Watch

- Must not be the person performing the hot work.
- Must be trained to understand the inherent hazards of the work site and of the hot work.
- Must have fire-extinguishing equipment readily available and be trained in the use of fire-extinguishing equipment.
- Ensure safe conditions are maintained during hot work operations.
- Has the authority to stop the hot work operations if unsafe conditions develop.
- Will be familiar with facilities for sounding an alarm during a fire.
- Shall watch for fires in all exposed areas, sound the alarm if necessary, and try to extinguish them only when obviously within the capability of the equipment available.
- Will have no other primary function.
- Fire watches shall be continuously maintained for one hour after work is complete.
- Fire watch shall be periodically maintained for three hours after completing the initial one hour.
 - This requires the FO&M, Contractor, or Troubleshooter to come back each hour and conduct the post-hot work inspection.
- Will know the location of the nearest phone and the Dartmouth Department of Safety and Security number. 603-646-400

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