

Hot Work Safety Program–6900-4.1

Associated OHS Process: General Industry & Construction Safety

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1.1 Objective

This Hot Work Safety Program provides policies and procedures to make sure the safety of University of Virginia (UVA) Facilities Management (FM) employees.

For the purpose of this program, Hot Work means welding, brazing, cutting, soldering, thawing pipes, using heat guns, torch applied roofing and chipping operations, or the use of spark-producing power tools, such as drilling or grinding.

1.2 Scope

This Program applies to all University of Virginia personnel who perform hot work. A Hot Work Permit must be completed at least 24 hours in advance of planned hot work projects requiring coordination with HVAC and fire alarm personnel, and as soon as possible for emergency hot work tasks.

2. Regulations & Other Requirements**2.1 Occupational Safety & Health Administration (OSHA)**

This Hot Work Safety Program complies with OSHA Standard 29 CFR 1910 Subpart Q, *Welding, Cutting, and Brazing*.

2.2 Fire Prevention Code

This Hot Work Safety Program complies with International Fire Prevention Code (Virginia Statewide Fire Prevention Code Chapter 26: "Welding and Other Hot Work.")

2.3 University of Virginia

This Hot Work Safety Program complies with UVA-FM requirements.

3. Roles and Responsibilities**3.1 Facilities Management Occupational Health & Safety**

- a) Upon request, assess potential hot work to assist with determining the need for a permit
- b) Inspect hot work areas as necessary to assist with compliance
- c) Immediately stop all hot work operations that are unsafe or have not properly complied with this Hot Work Safety Program
- d) Provide Fire Extinguisher Training

3.2 Supervisors

- a) Make sure that cutters or welders are suitably trained in the safe operation of their equipment and fire extinguishers
- b) Establish designated areas for hot work conducted on a routine basis
- c) Make sure that designated areas are free of hazards and are appropriately designed
- d) Make sure proper communication between the employee doing the hot work, the fire alarm technician, and the HVAC technician
- e) Determine the combustible materials and hazardous areas present or likely to be present in the work location
- f) Ensure routine operations are suspended during hot work, if they may create a greater hazard
- g) Advise employees and contractors of flammable materials or hazardous conditions that exist in areas where hot work will be conducted

Facilities Management
Occupational Health and Safety

- h) Make sure that fire protection and extinguishing equipment are properly located at the hot work location
- i) Make sure that fire watches are provided for at least 60 minutes after hot work is finished. This can be extended up to three hours as determined by the supervisor
- j) Inspect the work area prior to authorizing emergency hot work operations
- k) Make sure proper personal protective equipment (PPE) is available to employees performing hot work
- l) Make sure that welding operators fill out and submit a Hot Work Permit
- m) Maintain closed Hot Work Permits for one year for inspection by FM-OHS
- n) Conduct atmospheric monitoring when flammable gasses or hazardous atmospheres are suspected
- o) Supervisor will distribute copies of the Hot Work Permit to HVAC and Fire Alarm Technicians, if required.

3.3 Heating Ventilating and Air Conditioning (HVAC)

- a) Evaluate HVAC systems prior to beginning hot work and schedule shutdowns or modifications in coordination with Hot Work Permits and hot work activities
- b) Fill out HVAC section on Hot Work Permit and sign in appropriate location
- c) Notify building occupants of HVAC shutdown, as appropriate
- d) Return HVAC systems to normal working conditions upon completion of hot work
- e) In buildings containing laboratories, contact EHS-Laboratory Safety and occupants PRIOR to shutdown to allow for proper storage of chemicals and non-disruption of research

3.4 Fire Alarm Technicians

- a) Fire alarm technicians are required to disable alarms as necessary. The “automatic fire detection disabled” check box on the Hot Work Permit must be initialed by a representative of the responsible shop before work is started.
- b) Notify building occupants as necessary
- c) Reactivate fire detection upon completion of hot work operation

3.5 FM Employees (Hot Work Equipment Operators)

- a) Complete and maintain appropriate training qualifications required to perform hot work to include Fire Extinguisher Training
- b) Secure authorization for the hot work operation from the designated management representative in the form of a Hot Work Permit (see Appendix C.1 and C.2) when required
- c) Inspect welding and cutting equipment and operate equipment as instructed by training and manufacturer’s operating manual
- d) Make sure the safe usage of cutting and welding equipment
- e) Properly use PPE
- f) Make sure required fire watch is being conducted
- g) Complete the “required precautions checklist” located on the Hot Work Permit before beginning work

4. Hot Work Safety Program

4.1 General Requirements

- a) A Hot Work Permit is required in order to perform work that involves a source of ignition when flammable materials are in the vicinity or can be considered a fire hazard.
- b) Complete a Hot Work Permit prior to beginning work, when required (see Appendix C.1 and C.2).
- c) Employees who operate hot work equipment must be properly instructed and qualified in the use of hot work equipment.
- d) Employees exposed to hazards created by hot work operations shall be protected by PPE.
- e) Manufacturer's instructions regarding the operation of equipment must be followed at all times.
- f) Inspect equipment for damage or defects. Damaged or malfunctioning equipment must be taken out of service until repaired and marked with the words "Out of Service, Do Not Use."
- g) No welding or cutting shall be performed on used drums, barrels, tanks, or other containers until they have been thoroughly cleaned or purged to remove all flammable liquids and gasses.
- h) Hot work is not permitted in explosive atmospheres, flammable or combustible materials storage areas, unventilated areas, or public areas without additional protective equipment such as screens or barriers.
- i) Where the hot work area is accessible to persons other than the operator of the hot work equipment, a sign displaying "Caution. Hot Work In Progress. Stay Clear." shall be conspicuously posted.

4.2 Personal Protective Equipment (PPE)

Appropriate PPE must be used whenever hot work is conducted. At a minimum, eye, face, and hand protection is required. Fire Watch Attendants monitoring hot work must also be provided with appropriate PPE. Other PPE as required (i.e., boots, gloves, hardhat, fall protection, and protective garments) must be used when required. Indoor hot work involving zinc-bearing base materials or filler metals coated with zinc-bearing materials and lead-base metals or materials (e.g., paint) must be done within local exhaust hoods, booths, or fixed enclosures. FM-OHS must be notified in order to conduct air or noise sampling.

- a) Screens must be used and arranged in a manner that provides protection for surrounding persons. Screens may not obstruct or prevent ventilation or egress.
- b) Local exhaust or general ventilation must be provided and sufficient to keep fumes, gases, and dusts below the permissible exposure limits and below 10% of the lower explosive limit for flammable materials.
- c) Welding cables and other equipment must not obstruct egress and be kept clear of passageways, ladders, and stairways.
- d) All operators and attendants of resistance welding or brazing equipment must use transparent face shields or goggles.

4.3 Fire Prevention and Protection

4.3.1 Area Preparation

- a) An approved fire extinguisher of sufficient size and appropriate type must be available within 30 feet of the hot work. The fire extinguisher must have a minimum rating of 2-A:20-B:C.
- b) Oxy-acetylene carts should be stored and transported along with an approved fire extinguisher.
- c) All movable fire hazards surrounding the hot work area must be removed. Fire hazards can include but are not limited to any material, state, process, or instance of combustion in which fuel is ignited and combined with oxygen, giving off light, heat, and flame.

- d) If neither the fire hazard nor the object to be welded can be moved, guards must be used to confine heat, sparks, and slag.
- e) Floor and wall openings or cracks must be covered or guarded so that combustible materials below the hot work area will not be exposed to sparks and hot slag.
 - f) Ducts and conveyor systems that might carry sparks must be suitably protected or shut down.
 - g) Combustible floors must be kept wet, covered with damp sand, or protected by fire-resistant shields. If a wet floor technique is used, employees operating arc-welding equipment must be protected from possible shock.
 - h) If welding is performed on noncombustible walls, precautions must be taken to prevent ignition of combustibles on the other side of the wall. Welding must not be attempted on walls or partitions of combustible sandwich-type panel construction.

4.3.2 Fire Watch

A “fire watch” is always required and is one or more persons dedicated solely to the lookout and control of stray fires that may be caused by hot-work activities.

- a) The fire watch shall include having fire-extinguishing equipment readily available and shall be trained in the use of such equipment. They should also be familiar with facility for sounding an alarm in the event of a fire.
- b) A fire watch must be maintained for at least 60 minutes after hot work has been completed to detect and extinguish possible smoldering fires.
- c) Personnel conducting the fire watch are responsible for extinguishing spot fires and communicating an alarm.

5. Program Review and Recordkeeping

5.1 Program Review

This Hot Work Safety Program shall be reviewed and updated at least annually and whenever necessary to reflect changes in UVA FM policies or procedures, industry standards, or government regulations.

5.2 Program Recordkeeping

Records of the Hot Work Safety Program will be considered obsolete when the new version is issued. Obsolete versions will be destroyed after three years.

Appendix B: Acronyms

FM	Facilities Management
HVAC	Heating Ventilating and Air Conditioning
OHS	Occupational Health and Safety
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment

Appendix C.1: Hot Work Permit Procedure

If not properly controlled, hot work operations present a fire hazard that may lead to significant property damage, injury, loss of life, unnecessary disruption of normal building functions and emergency response by unintentionally activating the automatic fire detection system.

A Hot Work Permit is required in order to perform work that involves a source of ignition when flammable materials are in the vicinity or that can be considered a fire hazard.

UVA-FM Employees engaged in hot work must be authorized to do so by their Facilities Management Supervisor or approved Project Manager.

To Complete a Hot Work Permit

- 1) Hot Work Permits may be obtained from your Supervisor, from the FM-OHS Website, or in Appendix C.2 of this program.
- 2) Hot Work Permits for scheduled work requiring coordination with HVAC and fire alarm personnel must be completed 24-hours before a project.
- 3) The Hot Work Permit must be complete before it will be authorized.

To Submit a Hot Work Permit

- 1) Submit completed hot work permits to your supervisor for authorization.
- 2) Supervisor will distribute copies to HVAC and Fire Alarm Technicians, if required.
- 3) Permit holders should be prepared for on-site inspection at all times.

Emergency and After-Hours Hot Work

- 1) Follow all hot work and Hot Work Permit procedures.
- 2) Fill out and deliver a copy of Hot Work Permit to your Supervisor.
- 3) Supervisors authorizing emergency and after-hours hot work must inspect the work area prior to allowing emergency and after-hours hot work operations.

Appendix C.2 Hot Work Permit
BEFORE INITIATING HOT WORK, ENSURE PRECAUTIONS ARE IN PLACE!
MAKE SURE AN APPROPRIATE FIRE EXTINGUISHER IS READILY AVAILABLE!

This Hot Work Permit is required for operations involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch-Applied Roofing and Cadwelding.

<p>INSTRUCTIONS</p> <p>1. Complete this form and turn it in to your supervisor and Fire Alarm and HVAC Shops as needed. 2. This form must be submitted 24 hours before work is started (except in emergency situations; see Appendix A of the Hot Work Safety Guide).</p> <hr/> <p>HOT WORK BEING DONE BY:</p> <p><input type="checkbox"/> UVA Employee <input type="checkbox"/> Contractor..... <input type="checkbox"/> Phone#.....</p> <hr/> <p>HOT WORK PROJECT: W.O.#..... Submitted Date: Expected Start Date: Time Expected Stop Date:</p> <hr/> <p>Location/ Building/ Floor</p> <hr/> <p>Nature of Job/ Object</p> <hr/> <p>AUTHORIZATION:</p> <p>I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for work.</p> <p>Name: Supervisor/ Responsible Party Signature: Phone #:</p> <hr/> <p>HVAC TECHNICIAN (if applicable):</p> <p>Name: Phone #:</p> <p><input type="checkbox"/> HVAC systems evaluated and shutdown or modified as necessary. <input type="checkbox"/> Date/Time: Initials: <input type="checkbox"/> Reactivated: Date/ Time:</p> <hr/> <p>FIRE ALARM TECHNICIAN (if applicable)</p> <p>Name: Phone #:</p> <p><input type="checkbox"/> Fire Detection Disabled Date/Time: Initials: <input type="checkbox"/> Fire Detection Reactivated: Date/Time: Initials:</p>	<p>REQUIRED PRECAUTIONS CHECKLIST</p> <p><input type="checkbox"/> Automatic Fire Detection has been disabled(A/N). <input type="checkbox"/> Available sprinklers, hose streams, and extinguishers are in service/operable. <input type="checkbox"/> Hot work equipment is in good repair.</p> <p><input type="checkbox"/> Requirements within 10 m (35 feet) of work:</p> <ul style="list-style-type: none"> • Flammable liquids, dust, lint, and oil deposits have been removed. Explosive atmosphere in area has been eliminated • Floors have been swept clean. • Combustible floors have been wet down, covered with damp sand or fire-resistant sheets. • Other combustibles have been removed where possible. Otherwise protect with fire-resistant tarpaulins or metal sheets are in place. • All wall and floor openings are covered. • Fire-resistant tarpaulins are suspended beneath work. <p><input type="checkbox"/> Work on walls or ceilings/enclosed equipment:</p> <ul style="list-style-type: none"> • Construction is non-combustible and without combustible covering or insulation. • Combustibles on other side of walls have been removed. • Danger exists by condition of heat into another area • Enclosed equipment has been cleaned of all combustibles. • Containers have been purged of flammable liquids/vapors. <p><input type="checkbox"/> Fire Watch / Hot Work area monitoring:</p> <ul style="list-style-type: none"> • Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks. • Name: • Phone #: • Fire watch is supplied with suitable extinguishers • • Fire watch is trained in use of this equipment and in sounding alarm. • • Fire watch may be required for adjoining areas, above and below. Monitor hot work area 60 minutes after job is completed. <p>Other precautions taken:</p> <p>Yes / No Confined space entry permit required? Yes / No Area protected with smoke or heat detection? Yes / No Ample ventilation to remove smoke/vapor from work area? Yes / No Lockout/tag-out required?</p>
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FOR QUESTIONS REGARDING THIS PERMIT CONTACT FM-OHS AT (434) 297-6379