



UNIVERSITY OF
NORTHERN COLORADO

Environmental Health and Safety

Hot Work Program

October 2023



UNIVERSITY OF
NORTHERN COLORADO

Environmental Health and Safety
Hot Work Program

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UNIVERSITY OF
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Environmental Health and Safety
Hot Work Program

I. General

This standard shall provide guidance for persons, including outside contractors and project managers, who manage, supervise, and perform hot work. This standard shall cover the following hot work processes:

- A. Welding/Soldering
- B. Grinding
- C. Thawing pipe
- D. Similar applications producing a spark, flame, or heat

II. Definitions

Designated Area: Permanent location designed or approved for hot work operations to be performed regularly.

Hot Work: Any work involving burning, welding, or similar operations that is capable of initiating fires or explosions.

Management: All persons, including owners, contractors, and so on, who are responsible for hot work operations.

Permit: A document issued by the permit authorizing an individual to authorize the performance of a specified activity.

Permit Authorizing Individual (PAI): The individual designated by management to authorize hot work. The PAI cannot be the hot work operator.

Welding/Soldering: Includes processes such as are welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

III. Roles and Responsibilities

A. Management

Management shall be responsible for the safe operations of hot work activity and shall establish permissible areas for hot work. Management shall ensure that only approved apparatus, such as torches, manifolds, regulators or pressure reducing valves, and acetylene generators, be used. These individuals shall be trained in the safe operation of their equipment and the safe use of the process. These individuals shall have an awareness of the inherent risks involved and understand the emergency procedures in the event of a fire.

Management shall advise all contractors about site-specific flammable materials, hazardous processes, and conditions, or other potential fire hazards. Contractors or sub-contractors performing hot work are responsible for their own hot work program. They are responsible for conducting their hot work activities in a sound, fire-safe manner that either meets or exceeds the precautions outlined in this hot work program.

B. Permit Authorizing Individual (PAI)

In conjunction with the management, the PAI shall be responsible for the safe operation of hot work activities. The PAI shall determine site-specific flammable materials, hazardous processes, or other potential fire hazards present or likely to be present in the work location. The PAI shall ensure the protection of combustibles from ignition by the following means:

1. Ensure the work is moved to a location free from combustibles.
2. If the work cannot be moved, ensure the combustibles are moved to a safe distance or have the combustibles properly shielded against ignition.
3. Ensure hot work is scheduled such that operations that could expose combustibles to ignition are not started during hot work operations.

The PAI shall determine that fire protection and extinguishing equipment are properly located at the site. Where a fire watch is required, the PAI shall perform the fire watch at the site. Where a fire watch is not required, the PAI shall make a final checkup ½ hour after the completion of hot work operations to detect and extinguish possible smoldering fires.

The PAI shall be familiar with the facilities and procedures for sounding an alarm in the event of a fire. They shall be aware of the inherent hazards of the worksite and the hot work and ensure that safe conditions are maintained during hot work operations. The PAI shall have the authority to stop the hot work operations if unsafe conditions develop.

The PAI shall have fire extinguishing equipment readily available and be trained in its use. Watch for fires in all exposed areas and try to extinguish them only when the fires are obviously within the capacity of the equipment available. If the fire is not within the capacity of the equipment, sound the alarm immediately.

C. Hot Work Operator

The hot work operator shall handle the equipment safely and use it as follows so as not to endanger lives and property.

1. The operator shall have the PAI's approval before starting hot work operations.
2. The operator shall cease hot work operations if unsafe conditions develop and shall notify management, or the PAI for reassessment of the situation.

D. Fire Watch

A fire watch shall be required when hot work is performed in a location where other than a minor fire might develop, or where the following conditions exist:

1. Combustible materials in building construction or contents are closer than 35 ft (11 m) to the point of operation.
2. Combustible materials are more than 35 ft (11m) away but are easily ignited by sparks.
3. Wall or floor openings within a 35 ft (11m) radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
4. Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.

A fire watch shall be maintained for at least ½ hour after completion of hot work operations to detect and extinguish smoldering fires. More than one fire watch shall be required if combustible materials that could be ignited by the hot work operation cannot be directly observed by the initial fire watch.

IV. Hot Work Areas

A. Permissible Areas

Hot work shall be allowed only in areas that are or have been made fire safe. Hot work shall be performed in either designated areas or permit-required areas.

A designated area shall be a specific area designed or approved for such work, such as a maintenance shop or a detached outside location that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas.

A permit-required area shall be an area that is made fire safe by removing or protecting combustibles from ignition sources.

B. Non-permissible Areas

Hot work shall not be allowed in the following areas:

- a. In areas not authorized by management.
- b. In sprinkled buildings, while such protection is impaired.
- c. In the presence of explosive atmospheres (that is, where mixtures of flammable gases, vapors, liquids, or dust with air exist).
- d. In explosive atmospheres that can develop inside unclean or improperly prepared drums, tanks, or other containers and equipment that have previously contained such materials.
- e. In explosive atmospheres that can develop in areas with an accumulation of combustible dust.

V. Hot Work Permit

Before hot work operations begin in a permit-required location, a written hot work permit by the permit authorizing individual (PAI) shall be required.

Before a hot work permit is issued, the following conditions shall be verified by the PAI:

1. Hot work equipment to be used shall be in satisfactory operating condition.
2. Where combustible materials are on the floor, the floor shall be swept clean for a radius of 35 ft. (11m). Combustible floors shall be protected by noncombustible or fire-retardant shields.
3. All combustibles shall be relocated at least 35ft (11m) horizontally from the worksite. If relocation is impractical, combustibles shall be protected with fire-retardant covers or otherwise shielded with metal or fire-retardant guards or curtains. Edges of covers on the floor shall be tight to prevent sparks from going under them, including where several covers overlap when protecting a large pile.
4. Openings or cracks in walls, floors, or ducts within 35 ft (11m) of the site shall be tightly covered with fire-retardant or noncombustible material to prevent the passage of sparks to adjacent areas.
5. If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire-retardant shields or guards shall be provided to prevent ignition.
6. If hot work is to be done on a wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side by relocating combustibles. If it is impractical to relocate combustibles, a fire watch on the opposite side of the work shall be provided.
7. Hot work shall not be attempted on a partition, wall, ceiling, or roof that has a combustible covering or insulation, or on walls or partitions of combustible sandwich-type panel construction.

8. Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, roofs, or other combustibles shall not be undertaken if the work is close enough to cause ignition by conduction.
9. Fully charge and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area. If existing hose lines are located within the hot work area defined by the permit, they shall be connected and ready for service, but shall not be required to be unrolled or charged.
10. If hot work is done in close proximity to a sprinkler head, a wet rag shall be laid over the head and then removed after the welding or cutting operation.
11. Special precautions shall be taken to avoid accidental activation of automatic fire detection or suppression systems (for example smoke detection, special extinguishing systems, or sprinklers).
12. Nearby personnel shall be suitably protected against heat, sparks, slag, and so on.

VI. Hot Work Permit-Not Required

1. Floor Tiles

When repairing floor tiles by heating the tile with a hand-held heating torch, a hot work permit and fire watch are not required if the following conditions are verified:

- a. Ensure combustible materials are moved away from the heat source.
- b. Ensure Section 3.3 a, 9, 10, 11, and 12 of this program are completed.

2. Parsons Hall – Grounds Shop (Designated Area)

Inside welding shields. When the area remains free of storage and remains in an acceptable condition.

3. Frasier Hall – Room 0171 (Designated Area)

Inside welding shields. When the area remains free of storage and remains in an acceptable condition.

4. Heating Plant – 1st Floor (Designated Area)

Allowed inside the welding shields (between Boiler 2 & 3). Blankets must be protecting the boilers and natural gas lines at all times and wood is not allowed in the area.

VII. Training and Recordkeeping

It is the responsibility of each department to ensure that their employees receive the required training. Training can be provided by the Environmental Health and Safety department. Training records will be retained by the Environmental Health and Safety office.



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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 any operation 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 Cad welding.

<p style="text-align: center;">INSTRUCTIONS</p> <p>A. Verify precautions listed at right (or do not proceed with the work).</p> <p>B. Complete and retain this permit.</p> <p>HOT WORK BEING DONE BY:</p> <p><input type="checkbox"/> EMPLOYEE</p> <p><input type="checkbox"/> CONTRACTOR</p> <p style="text-align: center;">- _____</p>	<p style="text-align: center;">REQUIRED PRECAUTIONS CHECKLIST</p> <p><input type="checkbox"/> Available sprinklers, hose streams, and extinguishers are in service/operable.</p> <p><input type="checkbox"/> Hot work equipment in good repair.</p> <p style="text-align: center;">Requirements within 35 ft. (10m) of work</p> <p><input type="checkbox"/> Flammable liquids, dust, lint, and oil deposits removed.</p> <p><input type="checkbox"/> Explosive atmosphere in area eliminated.</p> <p><input type="checkbox"/> Floors swept clean.</p> <p><input type="checkbox"/> Combustible floors wet down, covered with damp sand or fire-resistant sheets.</p> <p><input type="checkbox"/> Remove other combustibles where possible. Otherwise, protect with fire-resistant tarpaulins or metal shields.</p> <p><input type="checkbox"/> All wall and floor openings are covered.</p> <p><input type="checkbox"/> Fire-resistant tarpaulins suspended beneath work.</p> <p style="text-align: center;">Work on walls or ceiling/enclosed equipment</p> <p><input type="checkbox"/> Construction is noncombustible and without combustible covering or insulation.</p> <p><input type="checkbox"/> Combustibles on the other side of the walls moved away.</p> <p><input type="checkbox"/> Danger exists by the conduction of heat into another area.</p> <p><input type="checkbox"/> Enclosed equipment cleaned of all combustibles.</p> <p><input type="checkbox"/> Containers purged of flammable liquids/vapors.</p> <p style="text-align: center;">Fire watch/hot work area monitoring</p> <p><input type="checkbox"/> Fire watch will be provided during and for 30 minutes after work, including any coffee or lunch breaks.</p> <p><input type="checkbox"/> Fire watch is supplied with suitable extinguishers.</p> <p><input type="checkbox"/> Fire watch is trained in the use of this equipment and in sounding the alarm.</p> <p><input type="checkbox"/> Fire watch may be required for adjoining areas, above, and below.</p> <p><input type="checkbox"/> Monitor hot work area for 30 minutes after the job is completed.</p> <p style="text-align: center;">Other precautions taken</p> <p><input type="checkbox"/> Confined space entry permit required.</p> <p><input type="checkbox"/> Fire Protection Impairment Permit</p> <p><input type="checkbox"/> Is the area protected with smoke or heat detection</p> <p><input type="checkbox"/> Ample ventilation to remove smoke/vapor from work area</p> <p><input type="checkbox"/> Lockout/Tagout required</p> <p><input type="checkbox"/> Disable detectors</p>						
DATE: _____ JOB NO: _____							
LOCATION/BUILDING & FLOOR:							
NATURE OF JOB/OBJECT:							
NAME OF PERSON DOING HOT WORK:							
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.							
PAI SIGNATURE:							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">PERMIT</td> <td style="width: 33%;">DATE</td> <td style="width: 33%;">TIME EXPIRES</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td style="text-align: right;">AM/PM</td> </tr> </table>	PERMIT	DATE	TIME EXPIRES			AM/PM	
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THIS PERMIT IS GOOD FOR ONE SHIFT ONLY!							