

Hot Work Program

I. Purpose

The intent of the Hot Work Program is to define the rules for performing "hot work" as outlined in OSHA 29 CFR 1910.252. These regulations will minimize the possibility of injury or property damage due to improper management of open flame/high temperature processes. See Appendix A for definitions.

II. Hot Work Permit

- A. For any hot work that is performed in a location that is not designated as a hot work area, a hot work permit must be used. The Global Risk Consultants permit, which is used on campus, is shown in Appendix B. The Fire Safety Supervisor (FSS), who is to be designated by the Physical Facilities Director, must be notified and is responsible for checking the area for fire-safe working conditions. See Appendix C for fire safety precautions. The FSS is also responsible for making sure that stand-by fire extinguishers are present, assigning a fire watch when necessary, and making certain that all personnel in the area are properly warned of the work to be done. The FSS will then issue a Hot Work permit.
- B. The fire safety Supervisor will identify on the hot work permit:
 - The location and nature of the hot work
 - The name of the person (employee or contractor) doing the job
 - The expiration date and time
 - The emergency notification procedures
- C. The employee or contractor must submit the top copy of the permit to the FSS before work begins and hang the second page of the permit in a visible place in the work area; the permit is kept there until the job is completed, including the time allotted for the fire watch if one was needed. The first and second pages are stapled together and filed in the maintenance shop.
- D. A fire extinguisher or, if suitable, a water hose must be kept in the immediate area of the work.
- E. The fire watcher observes the worker performing the hot work and keeps a constant vigil for stray sparks, ignition or other fire hazards. He/she must remain in the work area for at least a half hour after the work is done to check for smoldering fires.
- F. If the hot work will be done in a confined space, all confined space entry procedures must also be followed.
- G. The completed permit must be turned in at the end of the job to the Fire Safety Supervisor who files the records for the hot work program.

III. Personal Protective Equipment

Protection of the eyes, face, neck, and hands is required during any type of hot work. A welding helmet and heavy insulated gloves provide some of this protection. See Appendix D for shade requirements for various welding processes.

- A. Only natural fiber clothing should be worn on the upper body extremities. A leather apron or full body leathers is recommended.
- B. Respiratory protection is not required for most welding jobs if good ventilation is provided. Appendix E provides guidelines to assist in the determination of the need for respiratory protection.
- C. Welding screens are required to protect adjacent workers from exposure to non-ionizing radiation. Adjacent workers are required to wear appropriate eye protection where screens are not feasible. Welder's assistants or anyone working in the screened area must wear appropriate eye protection.

IV. Contractors

Contractors, their employees, agents and subcontractors must follow OSHA regulations that apply to their operation. If they do not have their own hot work program, the contractor must comply with the Montana Tech hot work program. In all cases, the Global Risk Consultants Hot Work Permit is used.

V. Training

Required training will provided initially to new employees and whenever conditions or the program changes.

Updated December 2015

Appendix A

Definitions

- A. **Hot Work** refers to any job activity that uses or produces flames, sparks or heat that could act as an ignition source for any flammable liquid, gas or other combustible material in the area.
- B. **Fire Watch** refers to having one or more people on the hot work job whose only purpose is to prevent a fire from starting from hot work performed in areas that are not designated as hot work areas or if any of the following conditions exist:
 - ◇ Noticeable combustible materials, in building construction or contents, are closer than 35 feet to the point of operation or are easily ignited by sparks;
 - ◇ Wall or floor openings within a 35-foot radius expose combustible material in nearby 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.
- C. **Fire Watcher** refers to the person or persons who look for potential fires in all exposed areas during hot work and put out fires that are within the limits of the available fire extinguishers.



HOT WORK PERMIT

**BEFORE INITIATING HOT WORK, ENSURE PRECAUTIONS ARE IN PLACE!
MAKE SURE SPRINKLERS ARE IN SERVICE
AND FIRE EXTINGUISHERS ARE READILY AVAILABLE!**

Hot Work Permit is required for all 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 Welding.

- There are no safer ways of effectively/efficiently doing this job.**

Instructions

The Permit-Authorizing Individual must:
a) Verify precautions listed at right (or do not proceed with the work)
b) Complete and retain this page
c) Give the second page to the person doing the work.

Who, When, and Where?

Hot Work Being Done By	
<input type="checkbox"/> Employee	
<input type="checkbox"/> Contractor _____	
Date	Job Number
Location/Building and 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.	
Signature of Permit-Authorizing Individual	

Permit Expiration

Expiration Date	Expiration Time	<input type="checkbox"/> AM <input type="checkbox"/> PM
-----------------	-----------------	--

THIS PERMIT IS GOOD FOR ONE DAY ONLY!

Required Precautions Checklist

- Available sprinklers, hose streams, and extinguishers are in service/operable
 - Hot Work equipment in good repair
- Requirements within a 35 foot "sphere" of work:**
- Combustible dust or lint-producing equipment, fans, and conveyors isolated or shut down
 - Combustible/flammable materials removed, including: dust, lint, oil deposits (from all surfaces), packaging or stored materials, and flammable/combustible liquids.
 - Floor swept clean
 - Combustible floor wet down, covered with damp sand or fire-resistant sheets
 - Remove other combustibles where possible. Otherwise protect with fire-resistant tarpaulins or metal shields
 - All wall and floor openings covered
 - Fire-resistant tarpaulins suspended beneath work
 - Potentially hazardous atmosphere(s) eliminated?
- Work on walls/ceilings or enclosed equipment:**
- Construction is noncombustible. No combustible covering or insulation
 - Combustibles on other side of walls moved away
 - Enclosed equipment cleaned of all combustibles
 - Containers purged of flammable liquids/vapors
- Fire watch/hot work area monitoring requirements:**
- Fire Watch will be provided during and for ___ minutes after work, including all coffee or lunch breaks
 - Fire Watch is supplied with suitable extinguishers, charged small hose
 - Fire Watch is trained in the use of this equipment and in sounding alarm
 - Include additional watch for adjoining areas, above, or below
 - Monitor hot work area periodically for ___ hours after job is completed
- Atmospheric Monitoring**
- Periodic atmospheric monitoring required?
Frequency: _____ Min.
 - Oxygen between 19.5% and 23.5%
 - Lower Explosive Limit less than _____ % LEL
- Other precautions taken:**
- Confined Space or Lockout/Tagout permit completed if needed
 - Area smoke or heat detection had been disabled if present
 - Other _____

WARNING!

**HOT WORK IN PROGRESS
WATCH FOR FIRE!**

IN CASE OF AN EMERGENCY CALL: _____

AT: _____

WARNING!

Appendix C

Fire Safety Precautions for Hot Work

The following precautions should be taken before hot work begins:

1. Establish whether or not it is practical to move the work to a safer location.
2. Clear the area surrounding the work of hazards up to a 35-ft radius.
3. Sweep floors clean. Clean and remove grease and oils.
4. Where practical, stop other operations and processes involving flammable or combustible material.
5. Where practical, remove all flammable or combustible material from the work area; do not just seal the containers.
6. Cover combustible and flammable materials that cannot be removed with fire resistant material, and isolate the area with welding curtains, if practical.
7. Close all manhole covers or other openings in vessels that contain flammable liquids in the area.
8. Remove or protect all cylinders containing compressed gases in the area.
9. Close all doors and fire doors to prevent sparks from escaping.
10. Make sure automatic sprinkler protection is in service and fully operational, if available.
11. Keep hot work equipment in good repair. Check all hoses and their attachments for cracks and leaks.
12. When performing hot work on walls and ceilings, move combustibles away from the opposite side.
13. Evaluate all sewers within 50 ft. of the work area for the possibility of flammable vapors.
14. Isolate the hot work or ignition source work site from other hazardous areas. Close doors, seal cracks in walls, floors, and doors, and seal trenches.
15. Prohibit chlorinated solvents from use in or adjacent to all welding operations. Decomposition products such as phosgene can be formed as a result of the reaction of these solvent vapors with the radiation energy produced during welding operations.

Other alternatives to hot work should be considered if:

- * Processes involving flammable liquids, gases and dusts cannot be shut down and made safe.
- * Partitions, walls, ceilings or roofs have combustible coverings; for example, expanded plastic insulation.
- * Partitions are made of combustible sandwich-type construction.
- * Pipe or other metals can conduct enough heat to ignite nearby combustibles.
- * Large amount of combustible materials is difficult to move or cover such as roll paper, cotton or jute storage

Appendix D

Recommended Shade Numbers for Various Welding Processes	
Welding Process	Shade No.
Oxy-Acetylene Welding and Cutting	4-5
Shielding Metal Arc Welding: <ul style="list-style-type: none"> • 3/16-, 7/32-, 1/4-inch electrodes • 5/16-, 3/8-inch electrodes 	12 14
Gas-shielded Arc Welding: <ul style="list-style-type: none"> • Non-ferrous metal 1/16-, 3/32-, 1/8-, 5/32-inch electrodes • Ferrous metal 5/32-inch electrodes 	11 12
Gas Tungsten Arc Welding	12
Flux-Cored Arc Welding <ul style="list-style-type: none"> • Non-ferrous metal • Ferrous metal 	11 12
Plasma Arc Cutting	9-21
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Cutting: <ul style="list-style-type: none"> • Light, up to 1 inch • Medium, 1 inch to 6 inches • Heavy, 6 inches and over 	3 or 4 4 or 5 5 or 6
Gas welding: <ul style="list-style-type: none"> • Light, up to 1 inch • Medium, 1/8 inch to 1/2 inch • Heavy, 1/2 inch and over 	4 or 5 5 or 6 6 or 8

NOTE: In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation.

Appendix E

Respiratory Protection Guidelines for Some Welding Processes

		Shop Welding		Field Welding	
		Ventilation Good:	Ventilation Poor:	Ventilation Good:	Ventilation Poor:
		Exhaust vent is used to capture fumes and gases	Vent cannot be used due to physical or process restrictions	Open area spark enclosure, or inside vessel with excellent air movement	Spark enclosure or inside vessel with poor air movement
Welding Process					
Shielded Metal Arc Welding	Carb on Steel	Not required	Not required	Not required except for galvanized	Fume mask required
	Other Alloys	Not required	Fume mask required	Not required except galvanized	Fume mask required
Arc Cutting or Gouging		Arc cutting in shop not recommended; see field welding requirements		Fume mask required except for open plant areas	-Air supplied respirator -Helpers wear fume mask (minimum)
Oxy-Acetylene Torch Cutting		Not required		Not required except for galvanized	Air supplied respirator required
Plasma Arc Cutting		Air supplied respirator required for all plasma arc cutting			
Gas Metal Arc Welding		Not required	Air supplied respirator required	Not required	Air supplied respirator required
Gas Tungsten Arc Welding		Not required	Air supplied respirator required	Not required	Air supplied respirator required