

**THE UNIVERSITY OF OKLAHOMA
HOT WORK PERMIT PROGRAM**

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THE UNIVERSITY OF OKLAHOMA HOT WORK PERMIT PROGRAM

I. INTRODUCTION

The Occupational Safety and Health Administration rules regarding hot work operations may be found in 29 CFR 1910 Subpart Q, *Welding, Cutting, and Brazing*, Sections 251-255. Cutting, welding and brazing are considered “hot work” for the purposes of this program. Potential health, safety and property hazards may result from the fumes, gases, sparks, hot metal and radiant energy produced during hot work. Hot work equipment which may produce high voltages or utilize compressed gases also requires special awareness and training on the part of the worker to be safe.

II. SCOPE

This hot work program is designed to reduce the possibility of injury and/or damage to the University of Oklahoma’s employees, contractors, and property resulting from accidents associated with hot work. All University of Oklahoma employees performing hot work procedures must follow this program.

III. RESPONSIBILITIES

- A. The Environmental Health and Safety Office (EHSO) is responsible for:
 - 1. monitoring and reviewing the hot work permit program annually;
 - 2. conducting periodic inspections of hot work permit locations;
 - 3. conducting appropriate training for OU employees who perform hot work and for those who are designated to write hot work permits; and
 - 4. maintaining a list of all designated hot work permit writers.

- B. Supervisors are responsible for overall safety of operations, including:
 - 1. assigning qualified employees to perform the work tasks;
 - 2. securing authorization for the cutting or welding operations from a designated permit writer, and ensuring that the cutter or welder secures approval that conditions are safe before going ahead;
 - 3. ensuring the safe handling and use of the cutting or welding equipment;
 - 4. ensuring that welding or cutting equipment is properly inspected prior to use and monthly, and maintaining records of monthly inspections;
 - 5. assigning employees to perform fire watch duty when fire watches are needed;

6. terminating unsafe work practices or conditions;
 7. notifying the EHSO of unsafe working conditions that cannot immediately be resolved, and
 8. communicating potential hazards of each work task to assigned employees.
- C. OU employees with authority to hire contractors to perform hot work on OU property are responsible for:
1. verifying that the contractor's safety program includes a hot work program;
 2. notifying the contractor of his/her responsibility under this OU *Hot Work Program*;
 3. advising the contractor of combustible/flammable materials and/or hazardous conditions of which the contractor may not be aware in the area where hot work is to be performed; and
 4. notifying the University Fire Marshal at 405-325-2983 of the project (Norman campus only).
- D. Designated hot work permit writers are responsible for:
1. being familiar with the operation and the facility to the extent necessary to recognize any potential hazards;
 2. receiving appropriate training from the EHSO before issuing any hot work permit;
 3. ensuring that all conditions for hot work are met before issuing a permit;
 4. determining whether combustible/flammable materials and/or hazardous conditions or areas are present or likely to be present in the work location;
 5. protecting combustibles from ignition by:
 - a. moving the work to a location free from dangerous combustibles,
 - b. moving the combustibles away from the work, or
 - c. having the combustibles properly shielded against ignition;
 6. determining that fire protection and extinguishing equipment are properly located at the site;
 7. determining whether a fire watch is needed, and, if needed, requesting assignment
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- of an employee for fire watch and confirming his/her presence;
 - 8. ensuring that appropriate ventilation, protective clothing, and respiratory protection (if needed) are in place prior to issuing the permit, and
 - 9. sending copies of all permits issued to the EHSO on the day the permit is issued.
- E. Employees are responsible for:
- 1. conducting operations in a safe manner;
 - 2. recognizing and understanding potential hazards;
 - 3. attending and participating in required training; and
 - 4. reporting hazardous/unsafe conditions to supervisors.
- F. Contractors performing work on OU property are responsible for:
- 1. having a company safety program including a hot work permit program for their employees fully compliant with all occupational safety and health requirements;
 - 2. performing work on OU property in a way that does not expose OU faculty, staff, or students to hazardous conditions;
 - 3. inquiring about combustible/flammable materials or hazardous conditions if such information has not been provided; and
 - 4. with respect to a hot work permit:
 - a. for the OUHSC and OU-Tulsa campuses, providing a completed hot work permit form to the EHSO prior to performing any hot work on OUHSC or OU-Tulsa property, or
 - b. for the OU Norman campus, applying for a hot work permit from the University Fire Marshal, if not under the parameters of a building permit.

IV. DEFINITIONS

- A. **COMBUSTIBLE MATERIAL:** Materials that catch and sustain fire when subjected to heat from hot operations. This includes carpeting, paper, books, trash, furniture, cloth, wall coverings, chemicals and plastics.
 - B. **CONFINED SPACE:** An enclosed area that is large enough and so configured that an employee can bodily enter, and has the following characteristics:
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1. it's primary function is something other than human occupancy; and
 2. there is a physical configuration which requires the use of hands or contortion of the body to enter into or exit from, i.e, limited means of entry. Tanks, vessels, silos, storage bins, vaults, and pits are spaces that may have limited means of entry.
- C. **FIRE WATCH:** A person assigned to observe hot work operations and watch for and abate developing fires. It is required when hot operations are conducted within 35-feet of combustible or flammable materials, holes, walls, ceiling or floor openings where metal walls or floors can communicate heat to combustible or flammable materials.
- D. **FLAMMABLE MATERIAL:** Materials (liquid, solid, gas) such as; solvents, petroleum products, laboratory chemicals, cleaners, paints, thinners, compressed gases, that have a flash point of 100 degrees Fahrenheit or less.
- E. **HAZARD:** A condition or changing set of circumstances that presents a potential for injury, illness, or property damage. The potential or inherent characteristics of an activity, condition, or circumstances, which can produce adverse or harmful consequences.
- F. **HAZARDOUS ATMOSPHERE:** An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness from one or more of the following causes:
1. flammable gas, vapor or mist in excess of 10 percent of its lower flammable limit (LFL);
 2. airborne combustible dust at a concentration that meets or exceeds its LFL;
 3. atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
 4. atmosphere concentration of any substance for which a dose or a permissible exposure limit (PEL) is published in Subpart G, of OSHA Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances and that could result in employee exposure in excess of either; or
 5. any other atmospheric condition that is immediately dangerous to life or health.
- G. **HOT WORK:** Any work involving burning, welding, cutting, or similar operation that is capable of initiating fires or explosions.
- H. **HOT WORK PERMIT:** A permit required before starting any hot work operation.
- I. **LOCKOUT/TAGOUT:** The placement of a lock/tag on the energy isolating device in accordance with an established procedure, indicating that an energy isolating device shall not be operated until removal of the lock/tag in accordance with an established procedure.
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(The term “lockout/tagout” allows the use of a lockout device, a tag, or a combination of both.)

- J. **MOBILE HOT WORK:** Hot work performed in an area not specifically designed for hot work.
- K. **PERMANENT HOT WORK:** Operations conducted in stationary designated areas fully meeting the requirements in Section VI., *Hot Work Area Requirements*, where the type of work and personnel remain consistent.
- L. **PERSONAL PROTECTIVE EQUIPMENT (PPE):** Equipment that is used to protect eyes, face, head, and extremities such as: safety glasses, hard-hats, respirators, gloves, and protective clothing.
- M. **WELDING:** Includes arc welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

V. **HOT WORK PERMITS**

A hot work permit is required for all cutting or welding activities that are capable of initiating fires or explosions that are conducted on University of Oklahoma property. Examples of appropriate hot work permit forms are provided in Appendix A.

A. **ISSUANCE**

- 1. For an OU employee to issue a hot work permit, he/she must be approved by his/her supervisor as a designated hot work permit writer in advance. The person assigned for issuing permits should be qualified and be fully trained as a permit writer by the EHSO to examine the work site and ensure that appropriate protective steps are being taken.
- 2. The EHSO will issue all permanent hot work permits.
- 3. Designated hot work permit writers may issue mobile hot work permits.
- 4. Copies of all permits issued by designated hot work permit writers should be submitted via campus mail or in person to the EHSO on the day the permit is issued.

B. **PERMANENT HOT WORK OPERATIONS**

- 1. A permit is valid as long as work task, locations, conditions, operations and personnel remain the same.
 - 2. A new permit is required when any of the above change.
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C. MOBILE HOT WORK OPERATIONS

1. A permit is required for all mobile operations for each location.
2. The area must be inspected with a completed signed permit that is approved by a supervisor before work is started.

VI. HOT WORK AREA REQUIREMENTS

Areas where hot work is performed shall be properly designated and prepared as described in this section. If the requirements stated in this section cannot be followed, then welding, cutting, or brazing shall not be performed.

- A. Combustible materials should be at least 35 feet from the work site. If this is not possible, combustible material should be protected with metal guards or by flameproof curtains or covering.
- B. Floor, wall, and ceiling openings within 35 feet of the work site should be closed, sealed, or covered with non-combustible material to prevent hot sparks from entering walls or falling beneath floors or to a lower level.
- C. Fire resistant curtains should be placed around the procedure area. This will assist in minimizing stray sparks and will prevent ultra-violet light exposure to persons outside the procedure area.
- D. Movable fire hazards shall be removed from the vicinity of the hot work operations. Guards shall be used to protect immovable fire hazards and to confine heat, sparks and slag. (Example: plywood or metal sheeting).
- E. Fire extinguishing equipment shall be operational and on hand before hot work operations are to begin. Refer to Section X *Fire Protection*.
- F. Hot work shall not be performed in the following areas:
 1. in areas requiring a hot work permit in which authorization has not been granted;
 2. in sprinklered buildings while such protection is impaired;
 3. in all hollow spaces, cavities or containers before venting to permit the escape of air or gases before preheating, cutting or welding;
 4. on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which subjected to heat, might produce flammable or toxic vapors;

5. in areas near the storage of large quantities of exposed readily ignitable materials;
or
 6. where there is a potential for the presence of an explosive atmosphere or flammable gases, liquids or vapors.
- G. Warning signs shall be posted in and around all hot work operations (see Appendix B.) Signs shall indicate hazards present at the site and appropriate safety equipment (particularly eye protection) that is required.
- H. Ventilation or respiratory protection is required as follows.
1. Mechanical ventilation or use of air-supplied respirators for workers in the immediate vicinity is required under the following conditions:
 - a. the area has a ceiling less than 16 feet;
 - b. welding is being performed in a space less than 10,000 cubic feet per welder;
 - c. the welding space contains partitions, balconies, or other structural barriers to the extent that it obstructs cross ventilation; or
 - d. hot work is performed in a confined space.
 2. Local ventilation should be provided when zinc, mercury, lead, beryllium, or cadmium are present in the base or coated metal being welded, cut, or brazed. Air purifying or air-supplied respirators may also be required, based on airborne concentrations or potential airborne concentrations. The designated hot work permit writer should contact the EHSO in advance of doing such work so that appropriate precautions may be taken.
 3. When welding must be performed in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

VII. PERSONAL PROTECTIVE EQUIPMENT

All personal protective equipment (PPE) to be used must meet the requirements outlined in Appendix C.

A. EYE/FACE PROTECTION

1. Arc Welding and Arc Cutting
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- a. Helmets and hand held shields shall be used by personnel viewing the arc during welding and cutting operations.
- b. Safety glasses or goggles shall be worn during arc welding and cutting operations to provide protection from injurious rays and from flying objects. Safety glasses with side shields will be used when slag chips, grinding fragments and similar projectile hazards are present. The glasses or goggles may have either clear or colored glass, depending upon the amount of exposure to adjacent welding or cutting operations. Shade No. 7 thru 11 are recommended for safety glasses or goggles used for gas metal-arc and shielded metal-arc welding.
- c. Helpers shall also be provided with proper head and eye protection.

2. Gas Welding and Oxygen Cutting

- a. Goggles or other suitable eye protection shall be used during all gas welding or oxygen-cutting operations. Glasses with suitable filter lenses and without side shields are permitted for use during gas welding operations on light work, for torch brazing, or for inspection. Glasses with side shields will be used when slag chips, grinding fragments and similar projectile hazards are present. Common sunglasses or safety issue sunglasses are not considered an acceptable alternative.
- b. Helpers shall also be provided with proper eye protection.

3. Resistance Welding and Brazing

- a. All operators of resistance welding or resistance brazing equipment and their helpers shall use face shields, glasses, or goggles, depending on the particular job, to protect their faces or eyes, as required. Glasses with side shields will be used when slag chips, grinding fragments and similar projectile hazards are present.
- b. Helpers shall also be provided with proper eye protection.

B. CLOTHING

Appropriate clothing for hot work operations should be worn such that sufficient coverage is provided to minimize skin burns. Recommendations for appropriate clothing include the following.

- 1. Clothing should be made of heavy material.
- 2. Materials that melt (acetate, nylon, rayon, polyester) are not recommended.

3. Sleeves and collars should be buttoned.
4. Pockets should be eliminated from front of clothing.
5. Trousers should not be rolled up or have cuffs.
6. Frayed clothing should not be worn.

VIII. EQUIPMENT

- A. All welding and cutting equipment including attachments and accessories should be inspected prior to use.
 1. All equipment shall be in good working condition.
 2. Damaged or defective equipment shall be taken out of service immediately.
 - B. Documented monthly inspections should be performed by the equipment operator. A written record of the monthly inspection shall be maintained for a period of one year by the supervisor and shall include at least the following information (an example form for this is provided in Appendix D):
 1. date of the inspection,
 2. type of equipment inspected,
 3. equipment number, and
 4. signature of the employee performing the inspection.
 - C. Equipment used in confined spaces must:
 1. have welding electrodes removed from their holders when not in use;
 2. have welding holders positioned in such a manner as grounding will not occur;
 3. be properly grounded and secured before operations in a confined space can commence; and
 4. be disconnected from their power source when not in use.
 5. when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined space area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight.
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6. where practicable, when not in use, the gas torch and hose shall be removed from the confined space.

IX. COMPRESSED GAS CYLINDER STORAGE AND HANDLING

- A. Oxygen and fuel gas cylinders used for hot work should be segregated and stored at least 20 feet apart or separated by a noncombustible wall at least 5 feet high with the protective valve caps in place except when in use.
- B. Cylinder carts equipped with a cylinder restraint such as a chain or strap must be used for all transporting of compressed gas cylinders.
- C. Cylinders must be secured from tipping and in an upright position.
- D. Regulators must be compatible with the cylinder and its contents.

X. FIRE PROTECTION

- A. Combustible and flammable materials should be kept at a minimum of 35 feet from hot work operations. If this is not possible, the material should be protected from heat, sparks, and slag with protective non-flammable coverings/guards.
- B. No hot work operations will be conducted in the presence of flammable gases/vapors.
- C. Sprinkler systems shall remain operable where they exist. If necessary, sprinkler heads in the immediate vicinity may be temporarily shielded with non-combustible materials. However, no hot work shall be performed in any area where the fire suppression has been disabled.
- D. At least one 10-pound (or larger) ABC fire extinguisher is required for all hot work operations, and its location should be noted before work is begun. When a fire watch is required, two 10-pound (or larger) ABC fire extinguishers are required, one of which may be the facility-mounted fire extinguisher (its location should be noted before work is begun), and the other should be placed in the immediate vicinity of the hot work operation. Additional fire extinguishing equipment may also be on hand such as:
 1. pails of water;
 2. buckets of sand, and/or
 3. water or fire hoses.
- E. A fire watch is required when:
 1. 35-foot separation from combustible and flammable materials cannot be maintained;

2. wall or floor openings exist within 35 feet which expose material in adjacent rooms;
or
 3. metal walls/floors/ceilings exist which may transfer heat to flammable materials.
- F. Employees assigned to the fire watch duty shall:
1. be trained in the use of fire extinguishers;
 2. know how to report a fire and other emergency situations;
 3. ensure that appropriate fire extinguishers are available;
 4. ensure that safe conditions are maintained during hot work;
 5. be aware of the inherent hazards involved in the hot work; and
 6. maintain the watch for at least 30 minutes after the work is completed.

XI. TRAINING

- A. Employees and supervisors of employees who perform welding operations will be trained to:
1. demonstrate proper equipment operation and proper handling and storage of welding materials;
 2. recognize the potential hazards associated with various welding operations;
 3. know the safe work practices for welding operations;
 4. understand the importance and requirements of hot work permits;
 5. use the appropriate PPE for the job;
 6. recognize confined spaces and the requirements associated with them; and
 7. understand the importance of regular inspections of welding equipment, attachments, and accessories.
- B. Employees who will be designated permit writers will be trained to:
1. understand the requirements of this program and the related OSHA standards;
 2. recognize the potential hazards associated with various welding operations, and that
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it is their responsibility to address prevention of those hazards or to get assistance if needed;

3. know the safe work practices for welding operations;
4. know their responsibilities under this program, and the potential consequences of not taking or requiring appropriate precautions prior to issuing the permit;
5. recognize what appropriate PPE may be needed for the job and requiring that it be worn;
6. recognize confined spaces and the requirements associated with them; and
7. know how to complete and file the appropriate documentation.

APPENDIX A
EXAMPLES OF HOT WORK PERMIT FORMS

HOT WORK PERMIT THE UNIVERSITY OF OKLAHOMA																																												
1. Hot work supervisor name: _____	2. Date & time of work: Date: _____ Time: _____	3. Have emergency fire response procedures been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No																																										
4. Is a confined space permit required? <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Is lockout/tagout required? <input type="checkbox"/> Yes <input type="checkbox"/> No	6. Hot work equipment to be used.																																										
7. Location: _____ <input type="checkbox"/> Mobile Permit <input type="checkbox"/> Permanent Permit																																												
8. Reason for completing this hot work permit (check all that apply): <input type="checkbox"/> Combustible materials in the work area <input type="checkbox"/> Work area has potential for flammable vapors <input type="checkbox"/> Work area has potential for an oxygen-enriched atmosphere <input type="checkbox"/> Work will be done in a permanent location		9. Flammable/combustible material removed within 35-feet: <input type="checkbox"/> Yes <input type="checkbox"/> No																																										
10. Fire prevention procedures to be used during hot work: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; border: none;">Yes / No</td> <td style="width: 40%; border: none;"></td> <td style="width: 10%; border: none;">Yes / No</td> <td style="width: 40%; border: none;"></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Lockout/tagout</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Confined space entry procedure</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Test for flammable vapors with gas detector</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Displace pipeline/tank with water</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Erect fire-resistant barriers</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Ventilate area to control flammable vapors</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Place fire extinguisher around work site</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Clear work area of combustibles</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Wet down floor</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Place water hoses around work site</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Cover floor with wet sand</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Other (list below)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Drums filled with wet sand</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">_____</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Drums filled with water</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">_____</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">Fire watch</td> <td style="border: none;"><input type="checkbox"/> <input type="checkbox"/></td> <td style="border: none;">_____</td> </tr> </table> </td> <td style="width: 50%; 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11. Ventilation to be used: <input type="checkbox"/> Natural (work is outside) <input type="checkbox"/> Building mechanical system (ventilation is adequate and no heavy metals used) <input type="checkbox"/> Forced/local ventilation (confined space, heavy metal use, or limited existing ventilation) <input type="checkbox"/> Other: _____																																												
12. Personal protective equipment to be used: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> No respiratory protection required</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Safety glasses with side shields</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Air purifying respirator required (heavy metals used)</td> <td style="border: none;"><input type="checkbox"/> Welding glasses with side shields</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Air supplied respirator required (confined/limited space)</td> <td style="border: none;"><input type="checkbox"/> Hard hat</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Other: _____</td> <td style="border: none;"><input type="checkbox"/> Welder's hood</td> </tr> </table>			<input type="checkbox"/> No respiratory protection required	<input type="checkbox"/> Safety glasses with side shields	<input type="checkbox"/> Air purifying respirator required (heavy metals used)	<input type="checkbox"/> Welding glasses with side shields	<input type="checkbox"/> Air supplied respirator required (confined/limited space)	<input type="checkbox"/> Hard hat	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Welder's hood																																		
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13. Persons conducting hot work: Name and department _____ Name and department _____ Fire watch, name/department _____ Fire watch, name/department _____																																												
14. This permit is authorized and issued by a hot work supervisor. Name _____ Signature _____																																												
15. Fire watch (if assigned) has been maintained for ½ hour after completion of hot work. All ignition sources have been extinguished. This permit is closed. Date/Time _____ Fire Watch Name _____ Signature _____																																												

STATE RISK MANAGEMENT HOT WORK FORM

PART A № 140354

HOT WORK PERMIT

INSTRUCTIONS

- EVALUATE IF THE HOT WORK CAN BE AVOIDED OR COMPLETED IN A SAFER WAY.
- FOLLOW PRECAUTIONS LISTED TO THE RIGHT.
- COMPLETE PERMIT AND DISPLAY IN AREA WHERE WORK IS BEING DONE.

RECOMMENDED PRECAUTIONS CHECKLIST

- AVAILABLE SPRINKLERS, HOSE STREAMS, AND EXTINGUISHERS ARE IN SERVICE AND GOOD REPAIR.
- HOT WORK EQUIPMENT IS IN GOOD REPAIR.

REQUIREMENTS WITHIN 35 FT (11m.) OF WORK:

- COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, OR OTHER SHIELDS.
- FLOORS SWEEPED CLEAN OF COMBUSTIBLES.
- EXPLOSIVE ATMOSPHERE IN AREA ELIMINATED.
- FLAMMABLE LIQUIDS, DUST, LINT, AND OILY DEPOSITS REMOVED.
- ALL WALL AND FLOOR OPENINGS COVERED.
- FIRE-RESISTANT COVERS SUSPENDED BENEATH WORK.
- OTHER COMBUSTIBLE MATERIALS REMOVED OR COVERED WITH FIRE-RESISTANT COVERS.

WORK ON WALLS AND CEILINGS:

- COMBUSTIBLES ON THE OTHER SIDE OF WALL MOVED AWAY.
- CONSTRUCTION IS NONCOMBUSTIBLE AND WITHOUT COMBUSTIBLE COVERINGS.

WORK ON ENCLOSED EQUIPMENT:

- EQUIPMENT CLEANED OF ALL COMBUSTIBLES.
- EQUIPMENT PURGED OF FLAMMABLE VAPORS.

FIRE WATCH AND WORK AREA MONITORING:

- FIRE WATCH SHOULD BE PROVIDED DURING AND FOR 30 MINUTES AFTER WORK IS COMPLETED.
- FIRE WATCH TRAINED ON FACILITY ALARMS AND EQUIPPED WITH FIRE EXTINGUISHERS.
- FIRE WATCH MAY BE REQUIRED ABOVE, BELOW, AND IN ADJACENT AREAS.
- OTHER PRECAUTIONS TAKEN:

FORM FIELDS:

HOT WORK DONE BY: _____
 NAME OF EMPLOYEE: _____

NAME OF CONTRACTOR: _____

JOB DATE: _____ JOB NO.: _____

LOCATION (BUILDING & FLOOR): _____

TYPE OF JOB: _____

NAME OF PERSON PERFORMING WORK: _____

I VERIFY THAT THE ABOVE LOCATION HAS BEEN EXAMINED, THAT PRECAUTIONS ON THE CHECKLIST HAVE BEEN TAKEN TO PREVENT FIRE, AND THAT PERMISSION IS AUTHORIZED TO PERFORM THE WORK.

SIGNED BY: _____
 SAFETY SUPERVISOR: _____ SIGNATURE

AREA SUPERVISOR: _____
 _____ SIGNATURE

FIRE WATCH: _____
 _____ SIGNATURE

PERMIT EXPIRES: _____
 DATE TIME

Allianz Risk Consultants
 an Allianz company

WARNING!

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

Emergency Contact Information

NAME	DATE
NAME	DATE
NAME	DATE

Allianz Risk Consultants
 an Allianz company

UNIVERSITY OF OKLAHOMA HOT WORK FORM

001202

HOT WORK PERMIT

INSTRUCTIONS

- EVALUATE IF THE HOT WORK CAN BE AVOIDED OR COMPLETED IN A SAFER WAY.
- FOLLOW PRECAUTIONS LISTED TO THE RIGHT
- COMPLETE PERMIT AND DISPLAY IN AREA WHERE WORK IS BEING DONE

HOT WORK DONE BY:
EMPLOYEE NAME: _____

NAME OF DEPARTMENT/SHOP: _____

JOB DATE: _____ WORK ORDER # _____

LOCATION OF WORK (BLDG. & ROOM #)

JOB DESCRIPTION: _____

I VERIFY THAT THE ABOVE LOCATION HAS BEEN EXAMINED, THAT PRECAUTIONS ON THE CHECKLIST HAVE BEEN TAKEN TO PREVENT FIRE, AND THAT PERMISSION IS AUTHORIZED TO PERFORM THE WORK.

AUTHORIZED BY: (PLEASE PRINT)

HOT WORK PERMIT WRITER: _____

SUPERVISOR: _____

FIRE WATCH: _____

PERMIT EXPIRES: DATE: _____ TIME: _____

The University of Oklahoma

WARNING

HOT WORK IN PROGRESS
WATCH FOR FIRE

EMERGENCY CONTACT INFORMATION

NAME	TELEPHONE NUMBER
NAME	TELEPHONE NUMBER
NAME	TELEPHONE NUMBER

APPENDIX B

SIGNAGE



APPENDIX C
CRITERIA FOR PERSONAL PROTECTIVE EQUIPMENT

CRITERIA FOR PERSONAL PROTECTIVE EQUIPMENT

Specifications for Protectors

Material Properties: Helmets and hand shields shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization. Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.

Area of Protection: Helmets and hand-held shield shall be designed to protect the face, forehead, neck, and ears to the vertical lines back of the ears from weld spatter and from direct radiant energy from the arc.

Window for Filter and Cover Plates: Helmets and hand-held shields shall be provided with a window for filter plates and cover plates, and shall be designed for easy removal and replacement of plates.

Materials Effect on Skin: All protective parts shall be constructed of a material which will not readily irritate or discolor the skin.

Ventilation: Goggles shall be ventilated to deter fogging of the lenses. Ventilation of cup-type goggles shall be baffled to prevent passage of light rays into the interior of the eyecup.

Cover Lens or Plates: Cover lenses or plates shall be provided to protect the filter lens or filter plate in goggles, helmets, or hand-held shields from welding spatter, pitting, and scratching. Cover lenses and plates shall be clear, glass, or self-extinguishing plastic, and need not be impact resistant.

Filter Lenses or Plates: All filter lenses and plates shall be impact resistant. All filter lenses and plates shall be substantially free from bubbles, waves, and other flaws. All glass for lenses shall be tempered, substantially free from striae, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel. All filter lenses and plates shall meet the test for transmission of radiant energy prescribed in ANSI Z87.1-1968 - American National Standard Practice for Occupational and Educational Eye and Face Protection.

Marking: Filter lenses and plates shall bear some permanent distinctive marking by which the manufacturer and shade number may be readily identified. In addition, all glass filter lenses and plates, when treated for impact resistance, shall be marked to designate impact resistance.

Maintenance: Helmets and goggles shall be well-maintained. Helmets and goggles should not be transferred from one employee to another without being disinfected.

Shade Numbers: The following is a guide for the selection of the proper shade numbers. These recommendations may be varied to suit the individual's needs.

Welding operation	Shade No.
Shielded metal-arc welding - 1/16-, 3/32-, 1/8-, 5/32-inch electrodes	10
Gas-shielded arc welding (nonferrous) - 1/16-, 3/32-, 1/8-, 5/32-inch electrodes	11
Gas-shielded arc welding (ferrous) - 1/16-, 3/32-, 1/8-, 5/32-inch electrodes	12
Shielded metal-arc welding: 3/16-, 7/32-, 1/4-inch electrodes	12
5/16 -, 3/8-inch electrodes	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch.....	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/2 inch and over	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.

Protective Clothing

Gloves: All welders and oxygen cutters shall wear protective gloves. For light work, durable flame-resistant cotton gloves should be used. For heavier work, leather or suitable durable flame-resistant materials should be used. Insulated linings should be used to protect areas exposed to high radiant energy.

Aprons: Aprons made of leather or other suitable flame-resistant materials should be used when additional protection against sparks and radiant energy is desired.

Treated Clothing: Clothing treated with non-durable flame retardant materials shall be retreated after each wetting or cleaning.

- Wool clothing is preferable to cotton because it is not readily ignited and helps protect the welder from changes in temperature. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All outer clothing such as jumpers or overalls should be reasonably free from oil.
- Sparks may lodge in rolled-up sleeves or pockets of clothing or cuffs of overalls or trousers. It is recommended that sleeves and collars be kept buttoned and pockets be eliminated from

the front of clothing. Trousers or overalls should not be turned up on the outside.

- For heavy work, fire-resistant leggings or other equivalent means should be used.
- A sheet metal screen in front of the worker's legs can provide further protection against sparks and molten metal in torch cutting operations.
- Cape sleeves or shoulder covers with bibs made of leather or other flame-resistant material should be worn during overhead welding or torch cutting operations. Caps made from flame-resistant material may be worn under helmets to prevent head burns.

APPENDIX D

EXAMPLE HOT WORK EQUIPMENT MONTHLY INSPECTION FORM



MONTHLY WELDING EQUIPMENT CHECKLIST

NAME OF DEPARTMENT/SHOP:		
DATE OF INSPECTION:		
SIGNATURE OF INSPECTOR:		
TYPE OF EQUIPMENT INSPECTED:	EQUIPMENT NUMBER:	
1.	YES NO N/A	Have all connections to the machine been checked to make sure they are firmly attached?
2.	YES NO N/A	Has the grounding of the welding machine frame been checked?
3.	YES NO N/A	Are there signs of leaks (i.e., coolant, oil, gas, fuel, etc.) in the machine?
4.	YES NO N/A	Has all the equipment for shutting down the machine been provided?
5.	YES NO N/A	Have all printed rules and instructions covering operation of equipment supplied by the manufacturers been strictly followed?
6.	YES NO N/A	Have all electrode holders when not in use been placed so that they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks?
7.	YES NO N/A	No cables with splices are within 10 feet of the holder?
8.	YES NO N/A	Has the operator reported any equipment defect or safety hazard to their supervisor?
9.	YES NO N/A	Has all defective or hazardous equipment been tagged and taken out of service?
10.	YES NO N/A	Are equipment repairs made only by qualified personnel?
11.	YES NO N/A	Have all machines that have become wet been thoroughly dried and tested before being used?
12.	YES NO N/A	Have all cables with damaged insulation or exposed bare conductors been replaced?