The purpose of the Hot Work Program is to establish safety procedures for employees, contractors, and subcontractors engaging in any temporary operation involving open flame or producing heat and/or sparks capable of initiating fires and explosions. This program is also to prevent combustible materials from exposure to fire, sparks, hot metal, or any other source of ignition whenever hot work is performed outside of a designated safe hot work area. This program is designed to prevent injury and loss of property from fire or explosion as a result of hot work in all UW-Platteville spaces and activities.

Hot work operations shall be conducted in accordance with the following standards:

- OSHA 1910.252, Fire Prevention when welding, cutting, and brazing.
- NFPA 51B, Standard for Fire Prevention During, Welding, Cutting, and Other Hot Work

This program does not cover use of: candles, laboratory activities, pyrotechnics or special effects, cooking equipment, or electric soldering irons.

All hot work performed by outside contractors shall in conformance with NFPA 51B (Standard for Fire Prevention During Welding, Cutting, and Other Hot Work) at a minimum.

Gases

Many operations have some type of equipment to weld and cut metals. Acetylene is the most commonly used fuel gas. Oxygen helps other objects burn and creates fire hazards. Acetylene and oxygen both present hazards, however.

- Acetylene is very flammable and can ignite in different concentrations
- Oxygen cylinders contain enriched oxygen compared to the air; they can turn a spark into a life-threatening hazard.
- Cylinders can also rupture
- A cylinder can shoot through the air like a rocket if its valve is damaged or broken.

Storage and handling:

- When not in use, keep gas and oxygen cylinders at least 20 feet apart. OR, separate them with a proper firewall.
- Store cylinders away from each other flammable and combustible materials
- Store extra gas and oxygen cylinders separately—at least 20 feet apart or separated by a proper firewall.
- Keep cylinders away from physical damage, heat, and tampering.
- Store cylinders in an upright position. Chain them securely to keep them from falling over. Chain the welding rig securely to prevent it from falling as well.
- Close cylinder valves before moving
- Protective caps or regulators should be kept in place
• Roll cylinders on bottom edges to move. Do not drag
• Minimize cylinder movement when transporting.

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

Hot Work
Any work involving welding, brazing, soldering, heat treating, grinding, powder-actuated tools, hot riveting and all other similar applications producing a spark, flame, or heat, or similar operations that is capable of initiating fires or explosions.

Hot Work Permit
A document issued by the CHWS for the purpose of authorizing a specified activity

Hot Work Operator
An individual designated by Facilities Management to perform hot work under the authorization of a CHWS.

Welding and Allied Processes
Those processes such as arc welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

Responsibilities
Supervisors: must complete and issue hot work permits, ensure that employees are trained in hot work requirements, and ensure that contractor personnel meet requirements detailed in this plan. Hot work shall not begin until the supervisor can ensure and document the following:
• People and combustible materials will not be exposed to fire, sparks, or any other source of ignition
• Emergency response procedures are in place
• The work area is safe

Fire watch: Shall attend all hot work performed in circumstances where a other than a minor fire might develop.
These circumstances exist when one or more of the following is true:

- An appreciable amount of combustible material that can be easily ignited is within 35 feet of the hot work area
- An appreciable amount of combustibles are more than 35 feet away, but are easily ignited by sparks
- Wall or floor openings exist within a 35 foot radius of the hot work area that expose combustible materials in adjacent areas; openings include concealed spaces in walls or floors
- Combustible materials likely to be ignited by conduction or radiation are near the other side of hot work areas near the metal partitions, walls, ceilings or roofs

The fire watch shall also ensure that the appropriate extinguishing equipment is readily available and be trained in its use. The type of hot work procedures performed shall determine equipment required. The fire watch shall be familiar with the equipment for sounding an alarm in the event of a fire and watch for fires in all exposed areas. Personnel should not try to extinguish fires unless the fire is extinguishable given the capacity of the equipment available. In the event of fire beyond the extinguisher’s capacity, the fire watch shall summon aid.

A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

**Hot Work Requirements**

The following minimum requirements apply at locations where hot work will be performed:

- A hot work permit shall be completed to authorize hot work performed outside of designated safe hot work areas. Hot work may not begin until a permit has been obtained.
- Combustible materials, including ordinary combustible materials, and flammable and combustible liquids should be relocated at least 35 feet from the hot work area. If relocation is impractical, combustibles shall be protected with flameproof covers or shielded with metal or flameproof curtains.
- The hot work permit should specify the concentration of vapors and gases in areas as applicable.
- If flammable vapors or gases are present but their levels do not exceed 10% of the lower explosive limit (LEL), hot work should not be started until the person approving the permit:
  - Knows the source of the flammable gases or vapors and
  - Determined that their concentration will not increase while the hot work is in progress.
- Hot work should not be performed if the concentration of flammable gases or vapors exceeds 10% of the LEL.
- Lower areas should be roped off when hot work is performed overhead. Warning signs must then be posted to prevent combustible materials and personnel from entering the lower areas.
- Barriers should be placed around and under hot work areas to confine sparks unless this action is physically impossible.
- Open drains leading to underground systems that may contain flammable or combustible materials should be protected by the following:
o The atmosphere should be tested for flammable vapors before a permit is issued and
o The open drain should be covered with a fire blanket or similar protective shield to
prevent the entry of sparks, even if a safe atmosphere currently exists.

**Hot Work in Confined Spaces**
When performing hot work in confined spaces, employees shall comply with the Confined Space Entry Program. In addition, employees shall do the following;

- Keep all gas cylinders and welding machines outside of confined spaces
- Positively isolate the gas supply outside of the confined space when torches are to in use for a substantial period of time (such as during a lunch break); when practical, employees shall also remove torches and hoses from confined spaces
- De-energize electrode holders by electrically disconnecting the power supply when arc welding is to be suspended for an appreciable amount of time or the welder has occasion to leave work
- Use insulating mats or similar insulating equipment to protect welders using alternating current equipment over 50 volts from electrical contact with conductive materials.
- Ensure that available ventilation in the confined space meets the ventilation requirements set forth in 29 CFR 1910.252(c)

**Ventilation**
There needs to be proper ventilation available when welding in confined areas or where there are barriers to air movement. Natural drafts, fans and positioning of the head can help keep fumes away from the welder’s face.
Ventilation is sufficient if:

- The room or welding area contains at least 10,000 cubic feet for each welder
- The ceiling height is not less than 16 feet
- Cross-ventilation is not blocked by partitions, equipment, or other structural barriers.
- Welding is not in a confined space

If these space requirements are not met, mechanical ventilating equipment must be used. Equipment must exhaust at least 2,000 cubic feet of air per minute for each welder, except where local exhaust hoods or booths or air-line respirators are used.

**Prohibited Areas**
Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by the 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.
• In areas near the storage of large quantities of exposed, readily ignitable materials

**Personal Protective Equipment**

Infrared radiation can cause retinal burning and cataracts. Protect your eyes with the appropriate safety glasses, mask or helmet.

Protect your body from welding spatter and arc flash with protective clothing:

• Woolen clothing (possibly cotton)-never synthetic
• Welding jackets
• Flame-proof apron
• Gloves
• Properly fitted clothing that is not frayed or worn
• Long-sleeve shirts
• Fire resistant cape or shoulder covers for overhead work
• Leathers to protect specific body parts or areas

Remember to check protective clothing equipment before each use and to make sure that it is in good condition. Keep clothes free of grease and oil.

**Work Closeout**

• A fire watch shall be maintained for at least 30 minutes after completion of hot work operations in order to detect and extinguish smoldering fires.
• The supervisor or designee shall inspect the job site 30 minutes following completion of hot work and close out the permit with the time and date of the final check
• The completed hot work permit shall be retained for 6 months following completion of the project.