

Bowling Green State University

Hot Work Program

Purpose of Procedure:

These procedures have been established to comply with Ohio's Public Employee Risk Reduction Act, the OSHA Welding, Cutting and Brazing Standard (29 CFR 1910.252), and the NFPA Standard 51B. The purpose of this program is to establish requirements for work involving burning, welding, or similar operations that are capable of initiating fires or explosions to minimize the probability of property loss and personal injury.

Definition:

Hot work is any work involving burning, welding, or similar operations that are capable of initiating fires or explosions. This program shall cover, at a minimum, the following hot work processes:

- Welding and Allied Processes
- Heat Treating
- Grinding
- Thawing Pipe
- Powder-Driven Fasteners
- Hot Riveting
- Similar Application Producing a Spark, Flame or Heat

Responsibility:

All people conducting hot work are responsible for the initiation and execution of approved hot work procedures as defined by this procedure. Contractors are required to follow Bowling Green State University's hot work program, or their own company hot work program, whichever is more stringent. Before any hot work is to be conducted, Campus Operations Supervisor(s) or other qualified personnel must advise contractors about flammable materials or hazardous conditions of which they may not be aware.

Procedure:

1. Hot Work Areas

Campus Operations Supervisors, or other qualified personnel (as determined by Risk Management/EHS Staff) shall determine the suitability of designated areas for hot work. Hot work can be performed in two types of areas, designated areas and permit-required areas. The designated areas can be areas in the shop that have been approved for hot work and do not have to fill out a permit when performing hot work tasks. These areas must be made of fire resistant or of noncombustible construction. The second type of area is the permit-required area. The permit-required area requires a permit and is an area that shall be made safe by removing or protecting combustibles from ignition sources.

List of Designated, Non-permit Required Hot Work Locations at Bowling Green State University:

- Campus Operations- Weld Shop
- Campus Operations- Grounds Maintenance and Mechanic Shop
- Fine Arts- Sculpture Room
- Fine Arts- Glass Room
- Fine Arts- Metals Shop
- Technology- Workshop
- Firelands- Manufacturing Lab in North Building

The following is a list of non-permissible hot work areas:

- Areas not authorized by the Campus Operations Supervisor or other qualified personnel.
- Sprinklered buildings while such protection is impaired.

- In the presence of an explosive atmosphere including improperly stored drums that once contained flammable materials.
- Areas near storage of large quantities of exposed, readily ignitable materials.

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.
- Pipes or other metal that are in contact with combustible walls, partitions, ceilings or roofs shall not be done if the work is close enough to cause ignition by conduction.

Personal protective equipment (PPE)

Clothing, health protection and ventilation requirements, such as gloves, welding curtains and eye protection, must be identified prior to work. To determine which PPE is required, please view BGSU's PPE Program. If unsure of what PPE is required, please consult with Permit Authorizing Individual (PAI) or supervisor. The following must also be practiced for fall protection:

- A welder working on platforms, scaffolds, or runways shall be protected against falling by the use of railings, life lines, or some other equally effective means.
- Welders shall also place welding cables and other equipment so that they are clear of passageways, ladders and stairways.

2. Hot Work Permit

The hot work permit identifies the risk of the potential for fire and is a tool used by Campus Operations personnel, Contractors, and by all other persons that perform hot work on any Bowling Green State University Campus to reduce the inherent risks involved in performing hot work. If hot work is to occur in a location other than that of a designated area, a written hot work permit is to be obtained from the PAI. At Bowling Green State University, the PAI are considered to be Campus Operations Superintendents. The hot work permit must be displayed at the job site during the hot work and, at the conclusion of the shift, the permit shall be returned to Campus Operations. Cutting, welding, or other hot work shall be permitted only in areas that are or have been made fire safe. The hot work permit is only good for one shift and the following conditions must be completed by the permit holder and verified by the PAI. Hot Work permits are to be kept on-file at Campus Operations for one full calendar year following the completion of the hot work.

General Requirements

- Hot work equipment being used in satisfactory operating condition and in good repair.

Requirements within 35 ft (11m) of hot work operations:

- The area is free from flammable liquids and combustible material or the work must be moved to an area free from combustibles.
- Combustibles that cannot be moved are shielded or protected against ignition.
- Combustible materials on the floor have been swept for a radius of 35 ft (11 m).
- Combustible floors have been kept wet down, covered with damp sand, or protected by shielding; personnel operating arc welding or cutting are protected from possible shock.
- Edges of covers at the floor are tight to prevent sparks from going under them.

Work on walls or ceilings/enclosed equipment:

- Where hot work is done near combustible walls, partitions, ceilings or roofs, fire resistant shields or guards are used. Remove combustibles away from opposite side or adjacent structures.
- Openings or cracks in the walls, partitions, ceilings or roofs of combustible material have been protected with fire-retardant shields or guards.

- If hot work is done in close proximity to a sprinkler head, a wet rag is placed over the head and then removed at the conclusion of the welding or cutting operation. Special precaution should be taken to prevent accidental operation of the automatic fire detection or suppression system.
- Ducts and conveyor systems that might carry sparks to distant combustibles are protected or shut down.

Fire watch/hot work area monitoring personnel:

- A trained and equipped fire watch individual is provided for the duration of work and at least 30 minutes after completion of work, including breaks.
- Fully charged and operable fire extinguishers are in the immediate work area.
- Nearby personnel are suitably protected against heat, sparks, slag, radiation, etc.
- After welding is complete, some means of warning that the metal is hot must be provided.

The following precautions are in addition to the requirements of a confined space entry program and must be followed when performing hot work:

- To prevent accidental contact, when arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine must be disconnected from the power source.
- In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, 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. Where practical, the torch and hose shall also be removed from the confined space.
- Best practice would be when welding or cutting is being performed in any confined space, the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement. Please consult Environmental, Health and Safety for assistance if there are any discrepancies on how to conduct confined space hot work tasks.

3. Responsibilities During Hot Work Operations

Permit Authorizing Individuals (PAIs) are responsible for:

- Issuing hot work permits and the time allotted for each permit, not to exceed 24 hours;
- The safe operation of hot work activities;
- Ensuring the protection of combustibles from ignition sources;
- Determining that fire protection and extinguishing equipment is properly located at the site; and
- Where a fire watch is not required, making sure a final check is completed 30 minutes after the completion of hot work to detect and extinguish possible smoldering fires.

Fire Watch Personnel

A fire watch is required when hot work is performed in a location where fires might develop or when any of the following conditions exist:

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

Fire Watch is responsible for:

- Being aware of the inherent hazards of the work site and of the hot work;
- Ensuring that safe conditions are maintained;
- Have the authority to stop the hot work if unsafe conditions develop;
- Having fire extinguishing equipment and being knowledgeable of its use;
- Sounding and being familiar with alarm procedures in the facilities in the case of an uncontrolled fire; and
- Watching for fires in all exposed areas, during hot work operations and for at least 30 minutes after completion, and trying to extinguish them only when they are within the scope of their training and equipment.

More than one fire watch shall be required if combustible materials that could be ignited by the hot work cannot be directly observed by only one fire watch.

Appropriate Campus Operations Supervisors, Contractor Supervisors, or other qualified personnel:

- See that hot work is not scheduled to be performed during operations that might expose combustibles to ignition;
- Tag out-of-service and immediately repair equipment if it is found to be incapable of reliable safe operation, including torches, manifolds, regulators or pressure-reducing valves and acetylene generators;
- Ensure that fire protection and extinguishing equipment is properly located at the site and employees are trained in their use; and
- Make a fire watch available if needed.

Hot Work Operators

- Obtain a hot work permit from the PAI and ensuring that conditions are safe before performing any hot work;
- Inspecting the area at least once per day while the hot work permit is in effect to ensure the area is fire safe;
- Inspecting the area before cutting or welding is permitted, determining site-specific hazards, and issuing hot work permits;
- Protect combustibles from ignition by having the work moved to a location free from combustibles, moving combustibles to a safe distance, or properly shielding against ignition;
- Safe handling and use of equipment, as well as determining any combustible or hazardous areas that are present in the work area;
- Understand the emergency procedures in the event of a fire and have an awareness of the inherent risks involved;
- Stop hot work operations and notify the appropriate Campus Operations Supervisor, other qualified personnel or the PAI, if an unsafe condition occurs; and
- Deliver completed hot work permits to the Help Desk or Campus Operations Supervisor (If completed after hours permit can be dropped off at Campus Operations via key drop-off box at the north entrance).

4. Training

Training must be provided to all responsible parties on:

- The inherent risks involved;
- The emergency procedures in the event of a fire;
- Instructions on all equipment and processes; and
- The provisions of this program.

See attached Bowling Green State University- Paragon Hot Work Permit.

HOT WORK PERMIT

Paragon Risk Engineering

PERMIT # 03285

If any of the items below are true, do not issue a permit.

- Hot work can be performed in a safer location.
- Alternate fastening methods are practical.
- This is a prohibited area, or is considered to be inherently unsafe.

If hot work is permitted, document the scope of the work to be performed:

Work performed by (contractor _____ or employee _____)	Location	
Description		
Date	Start time	End time

The person authorizing the hot work should verify that the following precautions are to be taken. Physical inspection of the site is required:

- Combustibles eliminated or otherwise safeguarded within 35-ft (11-m)
- Floor penetrations properly protected.
- Required fire protection, detection, and alarms systems are functional.
- Hot work equipment is in good repair.
- Adequate portable extinguishing equipment provided.
- Dedicated fire watch during the operation. (trained employee recommended)
- Area monitored after completion for a period of one hour.

Indicate NA in space provided if not applicable.

The above location has been examined, adequate precautions are being taken and permission is authorized for this work:

Signature	Title
Date	Time

The personnel who conducted the hot work should document the time when hot work was completed and the time that the monitoring period ended.

Time complete:	Monitoring complete:
Signature:	

The permit should be returned to the authority that authorized the hot work for sign off:

Signature	Title
Date	Time