



# Hot Work Procedure

## Purpose

This procedure is made to warn employees of hazards associated with completing hot work and steps to diminish these hazards by outlining safe operating practices and necessary training. Pee Dee Research and Education Center is dedicated to keeping its employees safe and will ensure employees are working to prevent hazards associated with hot work by enforcing the following procedures.

## Scope

This procedure is applicable to any work that could create a fire by an ignition source. This includes welding, brazing, torch soldering, grinding, power-actuated tools, hot riveting and all other applications producing a spark, flame, or heat. These tasks can result in injury, damage, and loss and therefore need to be completed with care and attention.

## Definitions

**Combustible materials:** material that can ignite and burn. Examples are wood, paper, plastics, fabric, etc.

**Designated hot work zone:** an area that has a hot work permit in effect always. These zones are in specific shops at PDREC:

- Turf Shop
- Farm Shop
- Buildings and Ground Shop
- Cotton Shop

**Hot work permit:** a permit given to allow hot work to be completed in areas other than designated hot work zones.

## Responsibilities

### Hot Work Leader (HWL)

Supervisors of employees completing hot work, referred to in this procedure as a hot work leader, are responsible for ensuring the employees are trained in the proper and safe use of their hot work equipment.



The HWL of each designated hot work zone is responsible for determining fire hazards at the site. They should ensure combustibles are protected from ignition sources by keeping all combustible materials a safe distance from the designated hot work zone and if the material cannot be moved, it needs to be properly shielded. If this cannot be done, the HWL is responsible for not allowing hot work to be performed.

The hot work leader assigns a fire watch at the site when the following conditions exist:

- Locations where other than a minor fire might develop.
- Combustible materials in building construction or contents are closer than 35 feet to the hot work zone.
- Combustible materials are more than 35 feet away, but easily ignited by sparks.
- Wall or floor openings within a 35-foot radius that expose combustible materials concealed 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.

When a fire watch is not required, the HWL should inspect the designated zone 30 minutes after the work is complete, to make sure there are no active fires.

The HWL is responsible for keeping a detailed record of hot work completed in the designated zones to include the name of the hot work operator, fire hazards in the area, if a fire watch was required, and the duration of the hot work. The hot work leader shall ensure that each record of hot work coincides with an inspection completed by the hot work operator.

### **Hot Work Operator**

The hot work operator is responsible for completing the designated hot work zone checklist before beginning work. This checklist must be complete to ensure there is fire protection and extinguishing equipment readily available, there is sufficient ventilation to prevent accumulation of smoke or fumes, and that all required PPE is available, in good condition, and worn during work. During the checklist, the hot work operator will double check there are no fire or combustion hazards. If a fire watch is necessary, then the hot work operator will make sure there is someone in place before work begins.

If any equipment defects or safety hazards are found during the inspection, the hot work operator will report them to the hot work leader and use of the equipment will be discontinued until it is deemed safe. Only qualified personnel will make repairs to the equipment and deem it safe for use.

When completing hot work in areas other than the designated hot work zones, the hot work operator is responsible for obtaining a hot work permit from the hot work leader before work begins.

The hot work operator is responsible for stopping work if unsafe conditions present themselves while working.

### **Fire Watch**

The fire watch is responsible for monitoring and observing hot work to ensure it is completed safely without explosions or fires. If hazardous conditions occur while the hot work is happening, the fire watch is responsible for stopping hot work.

The fire watch shall have fire extinguishing equipment near them in case the operations create a fire. Fire suppression by using an extinguisher should only be attempted if the fire watch feels it is safe and if the fire is a trashcan size or smaller.

### **Environmental Health Manager (EHM)**

It is the Environmental Health Manager's responsibility to create and enforce a Hot Work Procedure that follows OSHA standards. The Environmental Health Manager obtains Hot Work Permits from the Clemson Fire Department for designated hot work zones. These permits will be issued at the beginning of the year and will be in effect until the end of the year.

The EHM will make periodic inspections of the designated hot work zones to ensure fire prevention practices are taking place.

The EHM will make periodic inspections of records to ensure the hot work leader and hot work operator are completing their required paperwork.

## **Procedures**

### **Hot Work General Requirements**

Hot work can only be done in areas that have been deemed or made fire safe. To achieve fire safety:

- Combustibles should be relocated at least 35 feet away from the hot work site.
- If relocation is not possible, combustible materials should be shielded with metal, guards, curtains, or wet down, or a flameproof cover must be used.
- To prevent ignition of walls, partitions, ceilings or roofs near the hot work site, fire-resistant shields or guards must be used.
- Dust accumulations greater than 1/16<sup>th</sup> of an inch within 25 feet of a hot work zone must be cleaned/removed before hot work will be permitted.

- Ducts should be protected or shut down if there is the possibility of sparks traveling to combustibles nearby.
- A Hot Work Permit must be issued for any hot work done outside of a designated hot work zone.

Hot work is not allowed:

- In sprinklered buildings if the fire protection system is impaired.
- In the presence of explosive atmospheres or potentially explosive atmospheres.
- In explosive atmospheres that can develop in areas with an accumulation of combustible dusts (e.g., grain silos).

### **Hot Work in Designated Zones**

If a Hot Work Leader (HWL) and a Hot Work Operator (HWO) decide hot work is necessary in a designated work zone these procedures will be followed:

1. HWL will inspect the designated zone to determine any present fire hazards. Any fire hazards found must be made fire-safe before hot work begins. If it cannot be made fire-safe or moved from the area, hot work cannot occur.
2. HWL will determine if a fire watch is necessary. If so, they will appoint someone as fire watch and require them to be present for the entirety of the job task.
3. Once all fire hazards have been removed from the zone or made fire-safe, the HWL can permit the HWO to complete their hot work. The HWL will record the hot work operation in their records using the Records of Hot Work Form (Appendix A).
4. Before the HWO can begin work, they must fill out the Designated Hot Work Zone Checklist (Appendix B). Once everything is checked “yes,” they can begin. If any line is checked “no,” work cannot begin until it can be updated to “yes.”

### **Hot Work in Other Areas**

Hot work in areas other than a designated zone is required to have a Hot Work Permit before the job task can begin. The HWL will determine the length of period the permit is valid for which should not exceed one shift. Hot work permit tags are obtained from the Environmental Health Manager.

If work is being performed for a long period of time, a “blanket” permit can be given if the same ignition sources will be present the entirety of the job. The HWL should periodically inspect the area to ensure the job task has not changed in scope or hazard. If it changes, the blanket permit should be revoked, and daily permits will be required.



The HWL must observe and confirm that the following conditions are met before approving the Hot Work Permit:

- All equipment to be used must be in good condition – this includes welding equipment, personal protective equipment, and fire suppression equipment.
- If combustible materials such as wood or paper shavings are on the floor, a 35 ft radius must be cleared around the hot work equipment.
- Combustible floors must be wet down or protected by fire-retardant shields.
- All combustible materials within 35 feet must be moved before work can begin. If the material cannot be moved then it should be protected with fire-retardant covers, shields, or blankets. Any protective coverings shall be fit to ensure no sparks can reach the combustible material.
- Any openings in the floor or surrounding walls must be covered with a noncombustible material to prevent sparks from traveling to other areas.
- Fire extinguishers that are fully charged and in working condition must be present for the duration of the hot work. The type of fire extinguisher must be appropriate for the work to be done. DO NOT move a fire extinguisher that is supposed to be available in a building for this work. Use a fire extinguisher that is allowed to be moved.
- Any other persons in the vicinity of the hot work must have appropriate PPE to protect themselves from heat, sparks, and slag.
- The hot work zone must be appropriately blocked off and contain a sign warning against unauthorized entry into the area.

Once all the above conditions are met, the HWL can approve the Hot Work Permit. A hard copy of the permit should be posted where people can see it at the work location.

After the hot work is complete, a fire watch must observe the area for at least 30 minutes to ensure no fires are started. The HWL should inspect the area 30 minutes after work completion and document the date and time on the permit to close out the work. The Hot Work Permit shall be retained for 1 year by the HWL or the Environmental Health Manager.

### **Training**

Employees who are anticipated to complete hot work will be assigned Hot Work Training online through SciShield. This training must be completed anytime an employee is prompted.

Employees and supervisors shall also be trained on the protocols and procedures of this program by the Environmental Health Manager. This training is only required to be given once, unless employees need a refresher on the protocols.

Training online and in person shall include:

- Hazards associated with hot work.
- Responsibilities/roles associated with hot work.
- Procedures of completing hot work including the hot work permitted process.
- Documentation requirements.
- How to operate a fire extinguisher and when to use one.
- Emergency notification procedures.

The date, content of training, trainer, and trainees will be retained by 3 years by the Environmental Health Manager.

### **Revision History**

**Created December 2023 by Sara Pederson.**





Appendix B

## Designated Hot Work Zone Checklist

**Hot Work Operator:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Designated Hot Work Zone:** \_\_\_\_\_

*Each of the following must be checked yes for work to continue. If any are checked no, then work should not be continued, and you should report to your supervisor to address the problem before proceeding.*

Fire extinguishers nearby?     Yes     No

Sufficient air ventilation?     Yes     No

PPE available, in good condition, and worn?

- Flame-resistant gloves     Yes     No
  
- Flame-resistant apron     Yes     No
  
- Ear protection     Yes     No
  
- Welding helmet/face shield     Yes     No