

Purdue University Fort Wayne Hot Work Program

December 2004
Revisions: 5/13/05
10/12/06
2/25/07
11/2015
8/2016
1/2019

Table of Contents

<u>Section</u>	<u>Page</u>
Purpose	2
Scope	2
Definitions	2
Designated Hot Work Area	2
Fire Watch	2
Hot Work	2
Hot Work Operator	2
Hot Work Permit	2
Responsibilities for Hot Work	2
Departments	2
REM	3
Fire Watch	4
Hot Work Operators	4
Hot Work Requirements	5
Designated Hot Work Areas	5
Permit-Required Areas	5
Notification and Approval	6
Special Precautions	6
Work Stoppage	6
Confined Spaces	6
Welding or Cutting on Containers	6
Outside Contractors	6
Personal Protective Equipment	7

Hot Work Requirements

Purpose

Purdue University Fort Wayne (PFW) recognizes that there is a potential for injury to people and damage to property that can result from fire or sparks that arise when Hot Work is performed outside of a Designated Hot Work area. This operating procedure establishes an authorization system to ensure that all hazards are evaluated and that appropriate safety measures and controls are taken prior to, during and following any operation that uses an open-flame or spark-producing apparatus (i.e. Hot Work).

Scope

This operating procedure shall apply to all Purdue University personnel and all contract personnel working at all Purdue University locations, including PFW.

Definitions

Designated Hot Work Area – Areas that have been authorized by Radiological and Environmental Management (REM), based on their design, construction and posting of signs for performing open-flame or spark-producing work.

Fire Watch – Trained personnel who are in attendance during the entire Hot Work operation and are immediately available to extinguish a fire or take other effective action if needed.

Hot Work – Any work using an open-flame or spark-producing apparatus. Hot work includes, but is not limited to, welding, cutting, burning, grinding, and any related heat-producing jobs that could ignite combustible materials or flammable atmospheres.

Hot Work Operator – Any employee or contractor who operates an open-flame or spark-producing apparatus or performs any Hot Work operations.

Hot Work Permit – A special permit issued by your supervisor or REM, which authorizes specific Hot Work operations at a specific location. The Permit system is utilized when a Designated Hot Work Area cannot be used.

Responsibilities for Hot Work

Departments – are responsible for ensuring that the requirements of this operating procedure are understood and practiced by their employees. Additionally, any department that employs an outside contractor who will be performing any Hot Work, as defined, must meet the requirements of this procedure. Specific responsibilities of the department conducting or coordinating any Hot Work operations *outside* of Designated Hot Work Areas include:

- a. Contacting the person responsible for the area (i.e., department representative) in which the Hot Work procedures are to take place, informing that person of the scope of work to be performed and determining if they have any specific concerns about the procedure.
- b. Determining if combustible materials and/or hazardous areas are present or likely to be present in the work location.
- c. Protecting combustibles in the work location by:
 - i. moving the work to a Designated Hot Work Area or a location free of combustibles;
 - ii. if the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded (AIG-approved tarp, blanket, screen, etc.,) against ignition; or
 - iii. schedule the Hot Work during a time when the combustibles will not be in the area.
- d. Obtaining a Hot Work Permit from your supervisor or REM prior to initiating any Hot Work.
- e. Ensuring that workers are provided with and are using proper safety equipment, including personal protective equipment and fire extinguishing equipment. (Note: only employees trained in the proper use of fire extinguishing equipment may use such equipment).
- f. As required, designating an individual to serve as a Fire Watch.
- g. Ensuring that the work area is given a final inspection one hour after completion of the Hot Work portion of job to detect and extinguish possible hot spots or smoldering fires. The fire watch shall be released after the final inspection.

REM – is responsible for the development and maintenance of this operating procedure (i.e. Hot Work Program), providing resources for equipment and personnel training, and for auditing all operations to ensure compliance with this procedure. Specific responsibilities include:

- a. Providing initial training to PFW employees who will perform Hot Work Operations in the scope of their regular job duties and to employees who would coordinate the hiring of outside contractors to perform Hot Work Operations at PFW. Additionally, REM will provide refresher/periodic training, as deemed necessary by REM or the departmental supervisor.
- b. Reviewing and approving, in coordination with a departmental representative, locations approved for Hot Work Operations (Designated Hot Work Areas).

- c. Maintaining a list of Designated Hot Work Areas.
- d. Periodically inspecting Designated Hot Work Areas to ensure sure that conditions have not become unsafe for Hot Work Operations.
- e. If applicable, issuing a Hot Work Permit for work being done outside of the Designated Hot Work Areas, after the area has been inspected and approved by REM or other designated person.
- f. Suspending Hot Work Operations if conditions become unsafe for the work being performed.
- g. PFW's Police & Safety personnel will ensure that the proper fire-fighting equipment is in working condition, and is available for standby personnel.

Fire Watch – This position/responsibility shall be required whenever any Hot Work is performed at any location on campus *other* than Designated Hot Work Areas. The Fire Watch shall be any employee or contractor designated by the individual or department requesting the Hot Work Permit, but shall not be the actual employee(s) who is performing the Hot Work Operation. Specific responsibilities of this individual include:

- a. Having fire extinguishing equipment readily available and be trained in its proper use and limitations.
- b. Being familiar with facilities and procedures for sounding an alarm in the event of a fire.
- c. Watching for fires in all exposed areas, and attempting to extinguish them first only when appropriate to the available equipment and level of training or otherwise activating the alarm system
- d. The Fire Watch must remain at the work site during, and for at least 60 minutes following job completion to aid in the detection of smoldering fires. If the Fire Watch must leave the work site, all Hot Work Operations must stop. After the Hot Work is finished, the work area must be periodically monitored for 3 additional hours to detect and extinguish any smoldering fires that may occur.

Hot Work Operators – This individual must obtain proper authorization to perform Hot Work Operations when a Hot Work Permit (for work done in non-designated Hot Work Areas) is required. This individual shall handle the Hot Work equipment safely and use it so as not to endanger lives and property. The operator is also responsible for:

- a. Ensuring full compliance with the requirements of PFW's Hot Work Program.
- b. Being fully qualified to perform required Hot Work and verify that their equipment and tools are in good working order.
- c. Using appropriate safety equipment (per the Department's PPE Hazard Assessment), which may include: eye and face protection, hand

protection, body protection, head protection, hearing protection, and respiratory protection, as needed. For outside contractors, they must follow their company's policies.

- d. Avoiding any Hot Work Operations where conditions ARE NOT SAFE.
- e. Stopping Hot Work when conditions change from those set when work was approved.

Designated Hot Work Areas – Routine Hot Work operations shall be allowed without the requirement of a permit *only* in areas that are Designated Hot Work Areas. Contact REM at #14193 for a list of approved Designated Hot Work areas.

Permit-Required Areas – For those situations in which it is not practical to move the work to a Designated Hot Work Area, Hot Work shall only be allowed once the area is made fire safe by removing combustibles or protecting combustibles from ignition sources. Before a Hot Work Permit is approved and issued, the department or individual requesting the permit shall verify that:

- a. All Hot-Work equipment (e.g. welders, grinders, etc.) to be used is in satisfactory condition and in good repair.
- b. Any combustible materials on the floor must be swept clear for a radius of 35 ft. Floors constructed of combustible materials must be properly protected by either wetting the surface or covering it with AIG-approved materials (e.g. tarps, blankets, etc.). Where floors have been wetted down, personnel operating the equipment shall be protected from possible shock.
- c. All combustible materials must be relocated at least 35 ft. horizontally from the hot work area. Where relocation is not practical, the combustible materials shall be protected with AIG-approved or fire-resistant covers.
- d. Openings or cracks in walls, floors, or ducts within 35 ft. of the Hot Work area must be tightly covered to prevent the passage of sparks to adjacent areas. Where Hot Work is done near walls, partitions, ceilings or roofs of combustible construction, fire-resistant shields or guards must be used to prevent ignition on the other side. Additionally, a Fire Watch shall be provided on the other side of the wall, floor or duct.
- f. No Hot Work is attempted on a metal partition, wall, or ceiling or roof having a covering, nor on walls or partitions of combustible sandwich-type panel construction.
- g. Hot Work is not undertaken on pipes or other metals that are in contact with combustible walls, partitions, or ceilings or roofs, if the work is close enough to cause ignition by conduction.
- h. Nearby personnel are suitably protected against heat, sparks, slag, etc.

- i. Where Hot Work is to be done in close proximity to a sprinkler head, smoke/heat detector, or any other fire-detection equipment, contact your supervisor prior to work.

Notification and Approval – Once the temporary Hot Work Area has been properly prepared, the department or individual requesting the Hot Work Permit shall complete the Hot Work Permit form and contact their supervisor or REM for final review and approval. The supervisor or REM shall:

- a. Review the Permit request and verify that all necessary precautions have been properly taken. If necessary, a visual inspection may be conducted prior to final approval.
- b. Verify that the building's fire sprinkler system is operational, where applicable. Determine if the Hot Work Area has any fire alarm detectors that need to be disabled to prevent false alarms; if so, contact your supervisor.
- c. Verify the location, start time, and duration of the Hot Work Operation. A Hot Work Permit shall only be valid for the time duration identified. Typically, Hot Work Permits will be for an 8-hour period. If additional time is needed, the requester must notify their supervisor or REM for an extension or issuance of a new Permit.
- d. Once approved, the Permit shall be posted at the Work Area for the duration of the job. Upon completion of the Hot Work, the Hot Work Permit is to be sent to REM in SB G48.

Special Precautions

Work Stoppage – When Hot Work is stopped for an extended period of time, the equipment must be shut down and secured to prevent accidental sparking. If the Work stoppage will exceed the original duration time of the Hot Work Permit, the requester must notify their supervisor or REM to have the Permit extended or to request issuance of a new Permit.

Confined Spaces – Any Hot Work to be performed in a confined space shall be conducted in accordance with the Purdue University Confined Space Program.

Welding or Cutting on Containers – No cutting, welding, or other Hot Work is to be performed on any drums, tanks, containers or any vessel that may have contained chemicals or materials that when heated may produce flammable, explosive, or toxic atmospheres if the container has not been thoroughly cleaned and prepared.

Outside Contractors – Contractors shall perform all Hot Work procedures in accordance with these operating procedures or be able to demonstrate that they have a comparable procedure that meets or exceeds the requirements of this Operating procedure.

Personal Protective Equipment

Personal protective equipment (PPE) for eyes, face, head, and extremities, respiratory protection and protective shields and barriers, shall be used and maintained in a sanitary and reliable condition. Selection of appropriate devices should be made in accordance with the Purdue University Personal Protective Equipment Hazard Assessment and Selection Program. Outside contractors are required to provide their own PPE and shields, and no University equipment or tools are to be loaned to outside contractors.

Hot Work	Hazards	PPE Required
Grinding	Eye/Face: Flying particles.	Eye/Face: Safety glasses w/ side shield; goggles; face shield.
Soldering	Eye/Face: Infrared, flying particles; Foot: Burn; Hand: Flying particles.	Eye/Face: Filter spectacles or hand shield (shade 1.5-3); Foot: Safety shoes; shoe covers; Hand: Work gloves.
Welding – Electric Arc	Eye/Face: UV, flying particles; Whole Body: Flying particles; Foot: Burn; Hand: UV, Flying particles.	Eye/Face: Welding goggles, face shield (shade 10-14); Whole Body: Welding apron; Foot: Safety shoes, shoe covers; Hand: Welding gloves.
Welding – Gas	Eye/Face: Infrared, flying objects; Whole Body: Flying particles; Foot: Burns; Hand: Flying particles.	Eye/Face: Welding goggles, face shield (shade 4-5); Whole Body: Welding apron; Foot: Safety shoes, shoe covers; Hand: Welding gloves.