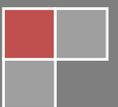


2019

# MCW's Hot Work Permit Program

## - Hot Work/Fire Watch Operations

This document is the Medical College of Wisconsin's (MCW) written program for conducting hot work, and identifies roles and responsibilities for MCW employees, as well as contractors that may work at MCW on a periodic or ongoing basis.





Contents

I. PURPOSE AND SCOPE...2
Purpose ... 2
Scope... 2
II. DEFINITIONS...2
Hot work ... 2
Fire watch... 2
III. PROGRAM RESPONSIBILITIES ...2
Authorized Personnel ... 2
Contractors ... 3
Fire Watch Personnel... 3
Hot Work Approvers ... 4
Program Administrator ... 4
Supervisors/Managers of those Performing Hot Work ... 5
IV. HOT WORK PROCEDURES...5
Obtaining a Hot Work Permit ... 5
Emergency Hot Work Permit (After Hours) ... 6
Tasks to Complete Prior to Hot Work ... 6
During and After Hot Work... 8
V. APPLICABLE REGULATIONS...9

APPENDICES

Appendix A – Hot Work Permit Example ... 10
Appendix B – Emergency Hot Work Permit Example... 11



## I. PURPOSE AND SCOPE

**Purpose** – The Medical College of Wisconsin (MCW) is committed to provide a safe work environment, to protect our employees from injury or death caused by uncontrolled hazards in the workplace. This Hot Work Program is designed to recognize the potential fire and explosion hazards associated with hot work operations, and to minimize or eliminate fire hazards by implementing appropriate hot work procedures. Hazards are addressed by meeting the general requirements as specified in OSHA standard [29CFR 1910.252](#) (Welding, Cutting, and Brazing).

**Scope** - This program applies to all MCW employees and contractors conducting hot work on MCW owned or leased property, or working in areas where hot work is taking place. All employees and contractors are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of Environmental Health and Safety.

## II. DEFINITIONS

**Hot work** - Operations including cutting, welding, thermal welding, brazing, flame soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar situation. Hot work includes MIG and TIG welding, however does not include soldering operations using a soldering iron.

**Fire watch** - Trained personnel who patrol the affected area. Personnel should have immediate access to fire extinguishers and the ability to promptly notify Public Safety if needed. During the patrol of the area, the person(s) should not only be looking for fire, but ensuring that the other fire protection features of the building such as egress routes and alarm systems are available and functioning properly.

## III. PROGRAM RESPONSIBILITIES

**Authorized Personnel** – This includes employees or contractors who are trained to perform hot work activities as defined above. Duties of authorized personnel include:



- Completing all required hot work training (including annual fire extinguisher training);
- Obtaining approval/permit to perform hot work, prior to beginning operations;
- Performing hot work activities in accordance with this program;
- Inspecting designated hot work areas for combustibles and other hazards prior to beginning hot work;
- Inspecting hot work equipment to ensure it is in safe operating condition before beginning work;
- Retaining control of the equipment while hot work is in process; and
- Posting approved hot work permit, and a sign indicating who to call in an emergency (see Appendix A)

**Contractors** – are responsible for:

- Following all Federal, State, and Local laws and regulations. Contractors are required to meet the intent of this program, and shall train their own employees in Fire Extinguisher and Hot Work Permit Procedures. Prior to beginning work on-site, MCW and the contractor must inform each other of their respective programs.
- Forwarding a copy of the contractor's written Hot Work program to MCW's [EHS department](#) prior to beginning work, or annually if there is an ongoing long-term contract.

**Fire Watch Personnel** – A fire watch is a designated employee (or contractor, in the event of contractor hot work) who monitors the hot work area for fires while work is being performed and for at least one hour after its completion. Duties of fire watch personnel include:

- Completing all required hot work training (including annual fire extinguisher training);
- Monitoring adjacent areas for fires;
- Extinguishing small, controllable fires with extinguishing equipment that is immediately available in the hot work area;
- Activating fire alarm if an uncontrollable fire occurs;
- After the hot work and mandatory 30 minute post-work monitoring period is complete, periodically returning to the area where the hot work was completed to check for fires over the next 30 minutes (this time may be increased at the discretion of the Hot Work Approver);
- Having a supervisor find another trained person to relieve him/her if the designated individual must leave for any reason



- Completing all appropriate sign-offs on the permit, and returning the permit to Facilities office.

**Hot Work Approvers** – MCW Facility Engineer and Maintenance Manager are responsible for:

- Ensuring only qualified and trained authorized employees perform hot work activities;
- If the work cannot be moved, ensuring all combustible materials in the vicinity (within 35' radius) are removed;
- If all combustible materials cannot be moved, ensure that guards or fire resistant curtains are in place to confine the heat, sparks, and slag;
- Inspecting hot work areas and reviewing safety precautions before hot work operations are approved to begin;
- If approval is granted, issuing hot work permits which list all required precautions;
- Identifying the proper personal protective equipment (PPE) needed during hot work procedures;
- Ensuring a fire watch is established during the work, and at least one hour after completion of the hot work; and
- Conducting final inspections after a fire watch period has concluded.

The Facilities Engineer is also responsible to conduct hot work/fire watch training when needed.

**Program Administrator** – The Program administrator (EHS Director or her/his delegate) reports to the Vice President of Facilities Engineering Maintenance, and is responsible for:

- Developing and/or providing appropriate training to all MCW employees that perform or authorize hot work activities;
- Establishing designated hot work areas;
- Establishing procedures and a permit system for performing hot work in non-designated areas;
- Designating individuals on all shifts who can approve hot work activities and issue permits in non-designated areas;
- Completing air monitoring in the event a potentially explosive atmosphere is identified;

- Providing outside contractors working at an MCW owned or leased property with information relating to the MCW Hot Work Program and procedures (via external Contractor Safety website); and
- Reviewing this program at least annually, or when changes are needed.

**Supervisors/Managers of those Performing Hot Work** – are responsible for:

- Ensuring only qualified and trained authorized employees or contractors perform hot work activities;
- Ensuring that employees or contractors who are found to have insufficient skills or understanding of hot work procedures do not perform hot work activities, and receive retraining before conducting additional hot work activities;
- Ensuring employees comply with all procedures described in this program;
- Ensuring hot work activities are approved prior to being performed in non-designated areas;
- Identifying dangerous situations unsuitable for hot work;
- Designating a qualified fire watch employee for all hot work performed in a non-designated area during and for no less than one hour after work is completed;
- Inspecting designated hot work areas after each shift to ensure no smoldering materials are present (currently no designated hot work areas with an annual permit exist at any MCW location);
- Providing information to the Program Administrator, regarding needed improvements for this program.

## **IV. HOT WORK PROCEDURES**

### **Obtaining a Hot Work Permit:**

- When it is necessary for authorized personnel to perform any hot work, as defined previously, he/she is required to obtain a Hot Work Permit. Each new job, or shift will require a new permit. Hot work permits will only be valid for a period of time not to exceed one 8-hour work shift. A new permit must be issued for each day if it is required.
  - Submit a Facility Service Order (FSO) request, for a hot work permit,(email Facility Engineer or Maintenance Manager; Fill out hard copy in Facility and Engineering office -M0950) noting when the permit is needed, for what task, and where the work will be conducted.



- Hot work permits must be requested at least two days prior to the work, unless it is an emergency. Emergency requests will be honored immediately upon notice to the Facilities and Engineering Department.
- Hot Work Permits will be issued by the Maintenance Manager or Facility Engineer; and signed accordingly. After the permit precautions have been initiated and completed, the permit will be posted in the work area. At the completion of the work, the permit will be retained in the Facility Maintenance departmental files for a period of one year.
- Hot work permits will be provided for each job on a daily 8-hour shift, and the authorized employee conducting the work will post the hot work permit in the hot work location until the work and fire watch period is completed.
- No designated hot work areas exist at MCW, and all hot work requires a permit.

### **Emergency Hot Work Permit (After 5pm and before 7am):**

- There may be occasions when hot work is necessary on second or third shifts, when the hot work approvers are not on site. In this situation, the maintenance person approved to conduct hot work may issue his/her own hot work permit (See Appendix B for an example permit). Note "EMERGENCY" on the permit.
- The fire watch must be present during the work, and in most cases, will be a Public Safety employee (trained in Fire Watch and Hot Work).
- When the work is complete, return the completed permit to the Facilities Office, and notify supervisory staff via email before end of shift.
- Blank hot work permits are located in the Facility and Engineering Office – M0950, near the Administrator's desk.

### **Tasks to Complete Prior to Hot Work:**

- Remove all sources of ignition (combustible and flammable materials) within a 35-foot radius of the work area/hazard zone. Ensure the area (including the floor) is free of debris, and that flammable liquids or vapors, lint, dust, or combustible materials/storage are not at risk of ignition from sparks or hot metal. If all fire hazards cannot be removed or relocation is impractical, then appropriate shielding or covers shall be provided to prevent sparks, slag, or heat from igniting fire hazards.
- Areas that will be exposed to sparks, hot slag, radiant or convective heat as a result of the hot work must be inspected prior to starting work to ensure the following:
  - Openings or cracks in walls, floors, ducts or shafts within 35-foot from the operation must be tightly covered to prevent passage of sparks or slag.



- If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire-retardant shields or guards shall be used to prevent ignition.
- If hot work is done on one side of a wall, partition, ceiling, or roof; one of the following criteria shall be met:
  - Precautions shall be taken to prevent ignition of combustibles on the other side by relocating combustibles.
  - If it is impractical to relocate combustibles, a fire watch shall be provided on the side opposite from where the work is being performed.
- 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.
- Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, roofs, or other combustibles, shall not be undertaken if the work is close enough to cause ignition by conduction.
- Hot work shall not be permitted in the following situations:
  1. In areas not authorized by management;
  2. In sprinklered buildings where sprinklers are impaired;
  3. In the presence of explosive atmospheres (i.e., where mixtures of flammable gases, vapors, liquids, or dusts with air exist);
  4. In the presence of uncleaned or improperly prepared drums, tanks, or other containers and equipment that have previously contained materials that could develop explosive atmospheres; or
  5. In areas with an accumulation of combustible dusts that could develop explosive atmospheres.
- Where sprinkler protection exists it will be fully operational while hot work is being performed. If hot work is to be done within 3 feet of automatic sprinkler heads, noncombustible sheet material or damp cloth guards will be used to temporarily shield the individual heads. Smoke detectors in the immediate area may be bagged in order to prevent contamination of the head and reduce nuisance alarms. When a sprinkler or detector head is covered or bagged, the personnel performing the work necessitating the covering/bagging will remove the cover/bag immediately after finishing the work. If work will extend throughout an entire day or following days the covers/bags will be removed any time the personnel conducting the work will be gone for 30 or more minutes.



- Fully charged and operable fire extinguishers appropriate for the type of possible fire shall be immediately available at the work area. Do not take the fire extinguisher from an existing in-use location for this work.
  - Fire extinguishers approved for use are 10# ABC extinguishers. In the event work is conducted inside an MRI room, the extinguisher must be “MRI-safe!!”
- The employees and/or supervisor shall be responsible for notifying the Maintenance Manager or Facilities Engineer (Hot Work Approvers) when and where hot work will be conducted.

### **During and After Hot Work:**

- The hot work operator shall handle equipment safely, and use it as follows so as not to endanger lives and property:
  - Utilize only approved, fully functional apparatus such as torches, regulators, pressure reducing valves, acetylene generators, machines, manifolds, cables and hoses in good repair. Equipment must be inspected by the operator prior to EACH use.
  - Wear appropriate personal protective equipment (PPE) such as goggles, shields, helmets, etc.
  - Provide adequate ventilation during hot work operations.
  - Place welding cables and other equipment clear of passageways, ladders, and stairways.
  - Provide appropriate shielding protect non-workers from exposure to arcs, slag, etc.
  - Utilize local exhaust or portable exhaust snorkels to remove smoke/fume from the work area whenever you are welding in small spaces (less than 10,000 cubic feet/welder), in rooms with ceilings less than 16 feet, or spaces that have partitions, balconies or other obstructions to good ventilation.
- The operator shall cease hot work operations if unsafe conditions develop and shall notify management, or the area supervisor for a re-assessment of the situation.
- If hot work is suspended for a period of time (e.g. during lunch or overnight):
  - Remove all electrodes from welding holders, and carefully locate the holders so that accidental contact cannot occur; and disconnect machine from the power source.
  - If using a torch with gas welding or cutting, close the torch valves and turn off the gas supply to the torch.



- Provide a fire watch during Hot Work activities, during lunch or rest periods and shall continue in the work area, for a minimum of 30 minutes after the conclusion of the operation. If the area is not occupied after 30 minutes of fire watch, at least one walkthrough by a fire watch must occur one hour after work completion, though this time requirement may be extended by the Hot Work Approver.
- Individuals designated for the fire watch shall have fire-extinguishing equipment readily available and must be annually trained in use and capabilities of such equipment, as well as potential fire hazards associated with hot work activities.
  - Individuals conducting a fire watch shall ensure that safe conditions are maintained during hot work operations, and have the authority to stop the hot work operations if unsafe conditions develop.
  - The individual conducting the fire watch shall be familiar with the facilities, procedures for sounding an alarm, and contacting emergency personnel in the event of a fire.

## **V. APPLICABLE REGULATIONS**

[OSHA Welding, Cutting and Brazing Standard \(General Industry\)](#) – 29CFR 1910.252

## Appendix A - Hot Work Permit Example



Global Property - Loss Prevention Engineering  
**HOT WORK PERMIT** PART 2 **AIG**

Can the work be completed using a different method or at a less hazardous location, such as the maintenance shop, which would not require the use of a hot work permit?

Permit Number: **0258810**

Hot Work Being Conducted by:  
 Employee: John Doe  
 Contractor: \_\_\_\_\_  
 Issue Date: 12/5/15  
 Job, Task or PO #: Pipe Repair  
 Location, Bldg & Floor: MEB Basement  
 Nature of Task:  Cutting  Welding  Grinding  Soldering  
 Brazing  Grinding  Soldering  
 Thawing Pipe  Torch Applied Roofing  
 Other \_\_\_\_\_

The location where this work is to be done has been examined and necessary precautions have been taken. Permission is hereby granted for this work.

Name of Person Issuing Permit: Ed Erichman  
Signed: Ed Erichman

Permit Expires  
Date: 12/5/15 Time: 2:30  AM  PM

Extended Fire Watch  
Extended Fire Watch Required  Yes  No  
Extended Fire Watch Duration \_\_\_\_\_ hours

Instructions:

- Person Doing Hot Work: Document the time work started and post the permit at Hot Work Location. After the Hot Work has been completed, document the date and time the work was completed and leave the permit at the site.
- Fire Watch: Prior to leaving the Hot Work location conduct a final inspection, sign, and document the date and time the fire watch ended and notify the permit issuer that the Fire Watch has been completed.
- Final Check Off: The individual who conducts the final check off must sign and document the date and time of the final check off and return the permit to the issuer.

Hot Work Completed. Signed: John Doe Date/Time: 12/5/15 2pm  
 Fire Watch Completed. Signed: Nick Bauer Date/Time: 12/5/15 3pm  
 Final Check-Off Completed. Signed: Ed Erichman Date/Time: 12/5/15 3:15pm

**Required Precautions Checklist**

- Review of the operations / tasks have been conducted and temporary Management of Change issued as necessary.
- Work permits or line cutting permits have been reviewed and issued as necessary.
- Sprinkler protection, hose streams and fire extinguishers are in service and operational.
- Hot work equipment is in good repair and secured as necessary.
- Floors have been swept clean of combustibles.
- Flammable liquids, combustible liquids, combustible dust, lint and oil deposits have been removed.
- Eliminate explosive atmosphere.
- Combustible floors have been wet down or covered with damp sand, metal or other non-combustible shields.
- Combustible materials have been removed or protected with fire resistive tarps/aulins or metal shields.
- All wall and floor openings have been covered.
- Fire resistive tarps/aulins have been suspended beneath the work to collect sparks.

Work on Walls or Ceilings  
 Construction is noncombustible and without combustible coverings or insulation.  
 Combustibles have been removed away from opposite side of wall or ceiling.

Work on Enclosed Equipment  
 Equipment has been cleaned of all combustibles. NA  
 Containers have been purged of flammable, combustible liquids, vapors or gases. NA  
 Pressurized vessels and piping have been removed from service, isolated and vented (LOCK OUT TAG OUT).  
 Equipment with stored energy or electrical energy has been removed from service and isolated (LOCK OUT TAG OUT). STEAM LINE SHUT DOWN - LOCKED OUT

Fire Watch  
 Fire watch will be provided during the task and for a minimum of 1-hour after the task has been completed or for the extended fire watch duration.  
 Fire watch has been trained in the use of and provided with portable fire extinguishers or charged fire hose line(s).  
 Fire watch is posted on lower floors if an opening exists that would allow sparks or embers to drop down.  
 Fire watch is trained on how to properly report a fire alarm via the plant fire alarm procedures or fire alarm system.  
 Hot work area will be monitored for 3-hours after the job is finished. 1HR. FIRE WATCH

This permit does not purport to set forth all hazards nor to indicate that other hazards do not exist. By providing this permit, neither AIG nor any of its employees make any warranty, express or implied, concerning the use of this permit. Furthermore, neither AIG nor any of its employees shall be liable in any manner (other than liability that may be expressed in any policy of insurance that may be issued by the Company) for personal injury or property damage or loss of any kind arising from or connected with this permit. Form 615 (10/2013)

## Appendix B - Emergency Hot Work Permit Example

### HOT WORK PERMIT PART 1

**Can the work be completed using a different method or at a less hazardous location, such as the maintenance shop, which would not require the use of a hot work permit?**

Permit Number: 0258808

Hot Work Being Conducted by:  
 Employee: John Doe  
 Contractor: \_\_\_\_\_

Issue Date: 10/1/15

Job, Task or PO #: \_\_\_\_\_

Location, Bldg & Floor: BSB 203

Nature of Task:    Cutting    Welding  
 Brazing        Grinding    Soldering  
 Thawing Pipe    Torch Applied Roofing  
 Other \_\_\_\_\_

The location where this work is to be done has been examined and necessary precautions have been taken. Permission is hereby granted for this work. EMERGENCY

Name of Person Issuing Permit: John Doe  
 Signed: John Doe

Permit Expires  
 Date 10/1/15 Time 11:30  AM  PM

Extended Fire Watch  
 Extended Fire Watch Required  Yes  No  
 Extended Fire Watch Duration \_\_\_\_\_ hours

**Instructions:**

1. Verify that all applicable precautions have been implemented and that the site is safe for hot work.
2. Part 1 (first page) should be completed and retained for records.
3. Issue Part 2 to individual(s) conducting the hot work and see additional instructions on Part 2.

**Important note: The facility should follow the guidelines listed on this form or those required by local jurisdiction, if more stringent.**

#### Required Precautions Checklist

- Review of the operations / tasks have been conducted and temporary Management of Change issued as necessary.
- Work permits or line cutting permits have been reviewed and issued as necessary.
- Sprinkler protection, hose streams and fire extinguishers are in service and operational.
- Hot work equipment is in good repair and secured as necessary.

**Within 35 ft (10 m) of task area(s)**

- Floors have been swept clean of combustibles.
- Flammable liquids, combustible liquids, combustible dust, lint and oil deposits have been removed. we barrier
- Eliminate explosive atmosphere. NA
- Combustible floors have been wet down or covered with damp sand, metal or other noncombustible shields.
- Combustible materials have been removed or protected with fire resistive tarpaulins or metal shields. (circled)
- All wall and floor openings have been covered.
- Fire resistive tarpaulins have been suspended beneath the work to collect sparks.

**Work on Walls or Ceilings**

- Construction is noncombustible and without combustible coverings or insulation.
- Combustibles have been removed away from opposite side of wall or ceiling.

**Work on Enclosed Equipment** NA

- Equipment has been cleaned of all combustibles.
- Containers have been purged of flammable, combustible liquids, vapors or gases.
- Pressurized vessels and piping have been removed from service, isolated and vented (LOCK OUT TAG OUT).
- Equipment with stored energy or electrical energy has been removed from service and isolated (LOCK OUT TAG OUT).

**Fire Watch**

- Fire watch will be provided during the task and for a minimum of 1-hour after the task has been completed or for the extended fire watch duration.
- Fire watch has been trained in the use of and provided with portable fire extinguishers or charged fire hose line(s).
- Fire watch is posted on lower floors if an opening exists that would allow sparks or embers to drop down. NA
- Fire watch is trained on how to properly report a fire alarm via the plant fire alarm procedures or fire alarm system.
- Hot work area will be monitored for 3-hours after the task is completed. NA