

HOT WORK PROGRAM

2020

**Introduction**

Murray State University recognizes a potential for fire from hot work operations. For that

reason this program should be implemented in all departments at the University to protect

employees and property from fire resulting from hot work operations.

This program applies to hot work activities in each department that meet the criteria set forth by

the written program. The program will also apply to outside contractors that provide a service to

the facility by performing hot work operations.

This program does not apply to designated areas that have been equipped for such operations, i.e.

Plumbing Shop’s designated welding areas. The designated areas will be defined by

department supervisors in correlation with Environmental Safety and Health. Hot work operations

conducted outside the designated areas should only occur when all other means to perform the

task have been exhausted.

**TABLE OF CONTENTS**

**HOT WORK PROGRAM**

1.0 Purpose………………………………………………..……………………….. 4

2.0 Definitions…………………………………………………………………..…..4

3.0 Hot Work Operations.………………………………………………….… 5

4.0 Hot Work Procedures………….……………………………………….… 5

4.1 Supervisor/Permit Administrators’ Responsibilities

4.2 Employee/Hot Work Operators’ Responsibilities

5.0 Employee Training.……………………………………………………………..6

5.1 Initial Training

5.2 Refresher Training

6.0 Hot Work Permit System………………………..…………………….……6

7.0 Program Evaluation…………………………………………………………….7

Appendix A: Employee Training Form ……………………………………..8

Appendix B: Hot Work Permit …………………………………………………9

Appendix C: Hot Work Audit Checklist ……………………………………10

**1.0 Purpose**

The purpose of this program is to provide guidance for persons, including outside contractors

and property managers, who manage, supervise, and perform hot work operations. The program

will establish written procedures and a permit system to prevent fires resulting from hot work

operations involving open flames or operations that may produce heat or sparks set forth by the

following standards NFPA 51B, OSHA 1910.252, OSHA 1926.352.

**2.0 Definitions**

**Hot Work** - Hot work is defined as any temporary maintenance, renovation or construction

activity using gas or electrically powered equipment, which produces flames, sparks, or heat that

is sufficient to start a fire or ignite flammable/combustible materials.

Some examples of ignition sources are: open flame, torch, welders, molten slag or metal, or

sparks from such work.

**Designated Area** – An area that has been designated to perform hot work operations such as

welding, torching, grinding, cutting, etc.

A hot work permit is not needed in a designated area if it meets the following requirements:

* Ensure that combustible materials such as paper clippings, wood shavings or textile fibers

are swept clean for a radius of 35 feet in the welding shop. 29 CFR 1910.252(a)(2)(v)

* Provide welding screens/curtains and place around the area where hot work operations

will be performed. The screen/curtain shall completely enclose the area.

* Develop a checklist, similar to the hot work permit checklist, and have employees

complete before hot work operations begin. The checklist should at least include the

date/time of the hot work operations.

**Permit** - A HOT WORK PERMIT is a document that will be required when the task requires the

use of a flame, sufficient heat or sparks to generate or serve as a source of ignition.

**Permit Administrator** - The shop supervisor or their designee (ie, project manager), is

responsible for all hot work operations, program compliance, and for issuing the Hot Work

Permit.

**Fire Watch** - A person who maintains awareness for the presence of fire or hazardous conditions

within the hot work area before and at least 30 minutes after the hot work. A fire watch may need to be extended based on the occupancy and construction factors below:

**Construction Factors**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Noncombustible construction | | Combustible construction without concealed cavities | | Combustible construction with unprotected concealed cavities | |
| **Occupancy Factors** | **Watch** | **Monitor** | **Watch** | **Monitor** | **Watch** | **Monitor** |
| Noncombustible with combustibles contained within closed equipment (i.e., ignitable liquid in pipes) | 30 minutes | 0 hours | 1 hour | 3 hours | 1 hour | 5 hours |
| Office or classroom with limited combustible loading | 1 hour | 1 hour | 1 hour | 3 hours | 1 hour | 5 hours |
| Warehouse or storage | 1 hour | 2 hours | 1 hour | 3 hours | 1 hour | 5 hours |
| Exceptions: Occupancies with processing or bulk storage of combustible materials capable of supporting slow-growing fires (i.e., paper, pulp, wood, bark, fabrics, grain, charcoal) | 1 hour | 3 hours | 1 hour | 3 hours | 1 hour | 5 hours |

The fire watch personnel shall be trained in the following items:

* Hazards of the work site in correlation with the hot work.
* Use of an appropriate fire extinguisher.
* Procedures for initiating the fire alarm and calling MSU Police at 911.
* Practices to safely extinguish any small fire using the extinguisher or welding blankets at the job site.

**3.0 Hot Work Operations**

The following operations have been identified as hot work operations: These are activities that

occur away from the designated workshop.

1. Welding

2. Acetylene/oxygen metal cutting

3. Soldering

4. Electric soldering

5. Metal grinding

6. Thawing pipes

**4.0 Hot Work Procedures**

* 1. **Supervisor/Permit Administrators’ Responsibilities**
     + 1. Perform site-specific inspections of the hot work area to identify flammable materials, hazardous processes, or other potential fire hazards that could be present.

1. Ensure the protection of combustibles from the ignition by meeting the following criteria:
   1. Moving hot work to a location free of combustible materials.
   2. If work cannot be moved, sweeping combustible to a safe distance from the operation or shielding from ignition source.
2. Provide appropriate PPE based upon a hazard assessment for employees performing the task.
3. Notify MSU Police before disconnecting any fire alarm system. Sprinkler heads or fire alarm systems shall not be covered or manipulated during hot work operations.
4. Provide appropriate fire extinguishing equipment in the hot work area or locate one in the building that is reasonably accessible for the duration of the hot work and for 30 minutes following the task.
5. Determine length of fire watch that is required based on occupancy and construction factors table found on page 4.
6. Administer hot work permit for all operations in which it is required.

**4.2 Employee/Hot Work Operators’ Responsibilities**

1. Remove all flammable or combustible materials within a thirty-five foot radius of the hot work area.
2. Remove all combustible debris (i.e., paper clippings, wood shaving, or textile fibers) from

hot work area.

1. Shield combustibles in the hot work area that cannot be removed with non-combustible

blankets or other non-combustible materials.

1. Use non-combustible spray such as No-Char or Char-Guard on combustible floors, walls,

or ceiling areas around hot work operations, if possible.

1. Seal all cracks and openings through which hot sparks or slag may enter. A fire resistant

shield may be used to block openings.

1. Place non-combustible or flame-resistant screens to protect personnel in adjacent work

areas from heat, flames, UV, radiant energy and weld splatter.

1. Ensure all cutting and welding equipment is in satisfactory condition and good repair.
2. Ensure employees are suitably trained in the safe operation of equipment and understand

the hot work process.

**5.0 Employee Training**

**5.1 Initial Training**

Initial training will be provided within 30 days of assignment. The supervisor must ensure that

all employees meet the requirements before assignment. The names of each employee shall be

documented on the list provided in Appendix A and documented as record for completion of the

training.

The supervisor will ensure that all new employees receive training before conducting a task that

meets the criteria of hot work operations in the written program. An employee can be utilized as a helper, prior to receiving the initial training, as long as they work directly under a trained

employee.

The initial training should include the following topics:

* + Written program
  + Hot work procedures, including how to obtain a permit
  + Proper equipment operation
  + Handling and storage of welding materials
  + Compressed gas cylinder safety
  + Fire watch
  + Fire precautions
  + Fire extinguisher training
  + Physical and chemical hazards
  + Hazard control
  + PPE selection and use

**5.2 Refresher Training**

Employees will receive refresher training in hot work at least three years after the initial training. The refresher training will include the topics set forth by the initial training. It will also provide updates or new requirements, if applicable.

**6.0 Hot Work Permit System**

A hot work permit (See Appendix B) shall be utilized before hot work operations begin in a non-designated location.

The procedures for the permits are:

* + - 1. The supervisor/permit administrator will inspect the area before authorizing a Hot Work

Permit.

* + - 1. The employee/hot work operator will complete the hot work permit at the job site and post

until completion of the job or the duration of the permit (not to exceed the work shift).

* + - 1. The employee/hot work operator will return the hot work permit to the supervisor after the

task is complete or at the end of the work shift.

* + - 1. The supervisor will retain the hot work permit for a period of time not to exceed one year.
      2. Permits will then be maintained by Environmental Safety & Health, as needed.

**7.0 Program Evaluation**

The hot work programs shall be evaluated on an annual basis utilizing the protocols set forth in

Appendix C. The evaluation team will consist of a designee from Facilities Management and

from Environmental Safety and Health. The Office of Environmental Safety and Health will define the scope of the evaluation. The deficiencies determined in the report will be documented and corrective action plans will be developed.

The evaluation should at least include the following:

* Written Program
* Permit System
* Designated Areas
* Individual Shops
* Training/Retraining

**Appendix A**

**Employee Training**

The following employees have received training on The Hot Work Program.

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Date** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Appendix B**

**Hot Work Permit**

**Before initiating hot work, can this job be avoided? Is there a safer way?**

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to brazing, grinding, soldering, thawing pipe, torch applied roofing and welding.

**Hot Work Permits may not be authorized for more than one shift!**

**Instructions:**

1. Verify precautions listed below or do not proceed with work.

2. Complete this permit and issue to person(s) performing the work.

3. Retain the completed permit in the project file.

|  |  |  |  |
| --- | --- | --- | --- |
| Permit #: | Date: | Shift: | Work Order #: |

Location of Work:

Equipment Number:

Purpose of work:

Name of company & person(s) performing the work:

Name of fire watch person:

Fire Watch Start Time: Fire Watch Stop Time:

**I verify the above location has been examined and the precautions checked below to minimize the chance of fire have been implemented.**

Supervisor’s Name: Signature:

Hot Work Hot Work

Duration (Hours): Start Time: Stop Time:

**Required Precautions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Yes** | **No** | **N/A** | **Item** |
|  |  |  | The fire pump is in operation and switched to automatic. |
|  |  |  | Control valves to water supply for sprinkler system are open. |
|  |  |  | Extinguishers are in service/operable. |
|  |  |  | Hot work equipment is in good working condition. |

**Requirements Within 35 Feet of Hot Work**

|  |  |  |  |
| --- | --- | --- | --- |
| **Yes** | **No** | **N/A** | **Item** |
|  |  |  | Shield combustible construction using welding pads, blankets, and curtains. |
|  |  |  | Remove combustibles or shield nonremovable combustibles using welding pads, blankets, and curtains. |
|  |  |  | Isolate potential sources of flammable gas, ignitable liquid or combustible dust/lint (e.g., shut down equipment). |
|  |  |  | Remove ignitable liquid, combustible dust/lint and residues. |
|  |  |  | Shut down ventilation and conveying systems. |
|  |  |  | Remove combustibles and consider a second fire watch on opposite side of floor, wall, ceiling or roof when openings exist or thermally conductive materials pass through. |
|  |  |  | Is work on a combustible roof? If yes, treat as a High-Risk Area and follow additional precautions below. |

**Hot Work On/In Closed Equipment, Ductwork and Piping**

|  |  |  |  |
| --- | --- | --- | --- |
| **Yes** | **No** | **N/A** | **Item** |
|  |  |  | Isolate equipment from service. |
|  |  |  | Remove ignitable liquid and purge flammable gas/vapor. |
|  |  |  | Prior to work, and/or during work, monitor for flammable gas/vapor.  LEL Reading(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | Remove combustible dust/lint or other combustible material. |
|  |  |  | Is work on/in equipment with nonremovable combustible linings or parts? If yes, treat as a High-Risk Area and follow additional precautions below. |

**Fire Watch/Fire Monitoring the Hot Work Area**

|  |  |  |  |
| --- | --- | --- | --- |
| **Yes** | **No** | **N/A** | **Item** |
|  |  |  | Perform a continuous fire watch during hot work. |
|  |  |  | Perform a continuous fire watch after hot work completion depending on occupancy and construction. See page 4 of Hot Work Program for fire watch times. |

**Appendix C**

**Audit Checklist**

**Hot Work Operations (Welding and Cutting) Checklist**

Building/Shop \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Room \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Assessment performed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A. General Welding and Cutting Controls | Yes | No | N/A | Comments |
| 1. Type of hot work operations performed |  |  |  |  |
| 1. Welding and cutting operations restricted to authorized employees |  |  |  |  |
| 1. Hot work performed in designated area |  |  |  |  |
| 1. Combustible materials moved at least 35 feet from worksite |  |  |  |  |
| 1. Floor and wall openings covered at least 35 feet from worksite |  |  |  |  |
| 1. Procedures developed to prevent welding and cutting in the presence of explosive or toxic air contaminants |  |  |  |  |
| 1. Fire resistant curtains and/or tinted shields provided |  |  |  |  |
| 1. Hot work permit obtained |  |  |  |  |
| 1. Local or general exhaust ventilation adequately used |  |  |  |  |
| 1. Appropriate personal protective equipment provided and used |  |  |  |  |
| 1. Appropriate fire extinguisher and/or fire suppression equipment provided in the vicinity of hot work |  |  |  |  |
| 1. Building sprinkler system operational during hot work operations |  |  |  |  |
| 1. Procedures developed to establish and maintain fire watch in hot work areas |  |  |  |  |
| 1. Hot work permit used |  |  |  |  |
| B. Welding or Cutting in Confined Spaces | Yes | No | N/A | Comments |
| 1. Procedures developed for confined space entry and rescue |  |  |  |  |
| 1. Ventilation and/or respiratory protection provided |  |  |  |  |
| 1. Electrodes removed from holders and/or gas supply shut off when operations are suspended for any substantial period |  |  |  |  |
| 1. Hot work permit used |  |  |  |  |
| C. Compressed Gas Cylinders | Yes | No | N/A | Comments |
| 1. Oxygen and fuel gas cylinders stored separately with protective value caps in place |  |  |  |  |
| 1. Regulators compatible with gas cylinder |  |  |  |  |
| 1. Cylinder carts used for transport |  |  |  |  |
| 1. Cylinders secured from tipping while in use |  |  |  |  |
| 1. Empty or unused gas cylinders returned to supplier |  |  |  |  |
| D. Training | Yes | No | N/A | Comments |
| 1. Workers trained in use of welding and cutting equipment, material hazards, and control methods |  |  |  |  |
| 1. Personal protective equipment training |  |  |  |  |
| 1. Confined space entry training provided, where necessary |  |  |  |  |
| 1. Workers trained in the written hot work program and/or permit system |  |  |  |  |
| 1. Employees trained in the use of fire extinguishers |  |  |  |  |