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Risk Management Division
310 Centennial Office Bldg
658 Cedar Street
St. Paul, MN 55155
http://mn.gov/admin/risk

Cutting, Welding, and Other Hot Work

I. Introduction

Welding, oxyacetylene cutting, hot riveting, grinding, chipping, soldering, and other activities that produce sparks or use flame are important tools of modern industry. The portability of the equipment, and its careless use outside maintenance areas specifically designed for its safe use, can increase the likelihood of fires that will destroy facilities and interrupt production. To make sure portable cutting, welding, and other hot work for maintenance, construction, or modification are done safely, a permit system is required.

Statement of the Problem

While industrial cutting, welding, and other hot work are common and useful production, construction, modification, and maintenance methods, they introduce hazards that must be controlled.

The principal hazard associated with portable hot work equipment is that it introduces unauthorized ignition sources into random areas of the facility. Heat sufficient to start fires or ignite explosive materials may come from a number of sources, including:

l. The open flame of a torch,
2. Metals being welded or cut,
3. Molten slag or metal that flows from the work,
4. Sparks that fly from the work,
5. An improperly handled soldering iron,
6. Dropped hot rivets, and
7. Improperly applied grounding clamps during electric arc welding.

The following guidelines shall be followed by both state employees and contractors during all hot work operations, except for those areas specifically designated for such work, e.g., a welding shop located in a maintenance area. The local facility manager shall be assigned to

inspect the area where hot work operations will be performed before a hot work permit tag is issued. Precautions to be followed before, during, and after hot work operations have been completed are listed in the following guidelines.

All personnel directly involved in the use of and supervision of equipment that is utilized in hot work shall be familiar with the equipment, the hazards of working with the equipment, and the actions required to prevent and extinguish fires when and if they occur.

II. General Requirements

Fire Prevention and Protection:

1. The basic precautions for fire prevention in welding or cutting work are:
2. **The attached Hot Work Permit shall be filled out for each hot work job and kept available at the job site.** To request a supply of Hot Work Permit cards, call (651) 201.2588.
3. **Fire Hazards**. If the object to be welded or cut cannot be moved, all movable fire hazards in the vicinity should be taken to a safe place away from the area (at least 35 feet).
4. **Guards/Welding Blankets**. If the object to be welded or cut cannot be moved, and all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards. Approved welding blankets should be used to cover combustible materials.
5. **Automatic Sprinkler Protection**. If hot work operations are to be conducted in a building protected by automatic sprinklers, it should be verified that the sprinkler system is in-service prior to conducting any hot work operations.
6. A **fire watch** shall be continuously present during the entire hot work activity and 30 minutes after completion. In addition, the work area should be monitored every 30 minutes for 4 hours after the welding and cutting are complete.
7. **Restrictions.** If the requirements listed above cannot be followed, welding and cutting should not be performed.

III. Specific Requirements

A. **Permits**. Permits shall be issued by the local facility manager and only to the individual performing the actual cutting or welding operation.

B. Permits shall not be approved for any length of time exceeding the normal shift hours of the welder or cutter, except:

   1. When welding or cutting operations are planned to continue into the next shift and the same welder or cutter is operating.
   2. When emergency repair work warrants the continued operation of cutting and/or welding into the next shift.

C. No permit shall be authorized to be in effect for any length over twenty-four continuous hours.

D. Permits shall be designed and administered as seen in the attached example.

E. Permits shall be issued and logged on a job-to-job basis. No permits shall be issued for general work in any location. Each specific job shall be issued a separate permit.

F. Logs will be maintained to record the issue and retraction of hot work permits. The log shall be kept in such a manner as to identify each permit issued, the time of issue, time of completion, work area and other necessary information, as required.

G. Once issued, the permit shall be posted in a conspicuous location near the work site so it may be observed during welding or cutting operations.

H. Authorization – provided by local Facility Manager:

1. Authorization shall not be given for hot work operations until all safety precautions and requirements listed on the permit are met. Under no circumstances is a permit to be issued sight unseen. An inspection of the work site must be conducted by the authorizing agent prior to authorization.

2. Authorization shall not be granted for hot work operations if:

   (a) The welder or cutter is not properly trained in welding or cutting operations.

   (b) Fire Watch is not identified and present at work site.

   (c) If welding or cutting equipment is not in proper operating condition and free from defect or damage.

   (d) If the authorizing individual feels that the operation may jeopardize the safety and welfare of workers, residents, and guests in the vicinity of the work.

3. Welding or cutting operations without authorization shall be permitted only in designated welding areas designed for that purpose, i.e., maintenance shop.

4. All other areas will require the use of a hot work permit, issued and signed by a competent authority (Facility Manager), prior to the start of any hot work.

WELDING and BURNING PERMIT

(Work is not permitted unless this card is filled in and posted in work area)

Date _____/_____/ _____ Time _____ AM PM

Building _____

Department _____ Floor _____

Work to be done _____

_____

Special Precautions _____

_____

Fire Watch Required? _____ Yes _____ No

The location where work is to be done has been examined by me, the necessary precautions have been taken (see back of permit), and permission is granted for this work.

Permit Expires _____/_____/_____ Time _____ AM PM

Signed _____

Individual responsible for work authorization (Facility Manager)

Time Started _____ Time Completed _____

FINAL CHECK

(Where fire watch is required)

Work area, and all adjacent areas where sparks might have spread, were continuously inspected during the entire time cutting, welding, or other hot work was conducted, and 30 minutes after completion. In addition, the work area was monitored every 30 minutes for four (4) hours after the cutting, welding, or other hot work was completed, and no fire conditions were noted.

Signed _____

Return this permit, after work is completed, to facility manager for filing.

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CHECK LIST

- ☐ Fire protection system(s) in service (sprinklers, CO_2, foam).
- ☐ Cutting and welding equipment in good condition.
- ☐ Floor/ground clean (and wet down when necessary).
- ☐ Combustibles at least 35 feet from welding area.
- ☐ Flammable liquids and other hazards removed from area.
- ☐ All floor and wall openings within 35 feet covered.
- ☐ Non-combustible covers used to protect nearby combustibles and equipment.
- ☐ Containers, tanks, ducts, and other enclosures cleaned and purged of flammable vapors, liquids, dusts, and other hazardous materials.
- ☐ Fire extinguishers or small standpipe fire hose provided.
- ☐ All hazardous operations discontinued in area.
- ☐ Fire watch should be present during, and at least one-half hour after, welding or burning has ceased.
- ☐ Location of nearest fire alarm box identified.

When possible, do work in a non-combustible area.

An individual should generally be assigned to watch for dangerous sparks in the area and the floor below.