



Hot Work Permit Program

Risk Engineering



Hot Work can present severe hazard

Hot work is defined as any operation that generates heat, sparks or flame. Cutting, welding, brazing or other hot work operations using portable equipment presents a severe hazard because these operations introduce ignition sources into your facility where nearby combustible materials may accidentally be ignited. The National Fire Protection Association (NFPA) estimates that approximately 6 percent of all industrial fires and 8 percent of all commercial fires are caused by inadequate safety procedures or faulty equipment used during hot work operations.

The majority of the fires occur from incidental hot work operations. Fires commonly occur from sparks (that can shoot up to 35 feet) which may catch combustible boxes, insulation, wood dust, etc., on fire. Or fire may be caused when molten slag rolls across the floor, falls through a crack and ignites surrounding combustible material. Still, other fires start in attics, ceiling or roof assemblies, or in concealed wall spaces, often due to activities such as pipe sweating and torch-applied roofing.

One of the most successful methods to prevent these fires is to implement a hot-work permit program. Essentially, this is a program in which the welding equipment operator requests permission to weld (and is granted a hot work permit).

Before the permit can be granted, the Permit Authorizing Individual (PAI) performs a pre-welding/cutting inspection of the location to insure that the area is made safe, that portable fire extinguishers are present and that a fire watch individual is utilized to assist with safety monitoring. The permit program should be used whenever hot work operations are conducted outside of a designated hot work area by maintenance personnel or outside contractors. A designated hot work area is defined as a permanent location designed for hot work, such as a welding shop.

Small facilities usually feel that because hot work is an infrequent occurrence, a formalized permit system is unnecessary. Actually, the less frequently hot work is performed, the more important it is to have an established program because employees will be unfamiliar with the hazards and precautions they must take.

Conversely, larger facilities that have established programs must be careful not to become complacent. When a large number of permits are issued regularly, the permit process tends to become a formality and the permit may be issued without a careful assessment of the involved area to verify necessary precautions are being taken.

Also, be aware that outside contractors cause approximately one-third of the hot work-related fire losses. Contractors must be closely supervised. All rules and regulations that apply to the employees should be equally applicable to any contractors. When using outside contractors, we urge policyholders to have written contracts that specify the standards of conduct for contractors.

Hot Work safety standards

Recommended welding and cutting safety practices are outlined below:

1. NFPA 51B Standard for Fire Prevention in Use of Cutting and Welding Processes. The standard specifies the precautions that should be followed to prevent loss of life and property from uncontrolled welding and cutting loss exposures.
2. OSHA standard 29 CFR 1910.252 and/or 29CFR1926.352 Standard for Welding, Cutting and Brazing – General Requirements. The standard requires that management recognize its responsibility for the safe use of cutting and welding equipment on its property and, based on fire potentials of plant facilities, establish areas for cutting and welding as well as procedures for cutting and welding in other areas.
3. ANSI Z49.1 Safety in welding, cutting, and allied processes. This is a voluntary welding safety and health standard from the American Welding Society® (www.AWS.org).

General responsibilities for establishing and managing the Hot Work Permit Program

The following are responsibilities of management and others in making a Hot Work Permit Program function correctly and safely.

Management

- Establish permissible areas for hot work. Designate areas where hot work is prohibited.
- Designate one individual in the organization as the Permit Authorizing Individual (PAI).
- Ensure that only approved apparatus including torches, manifolds, regulators and related equipment, is used.
- Ensure that everyone involved in hot work operations, including contractors, are familiar with, and follow the provisions of the Hot Work Permit Program.
- Specify that any contractors bidding on work include a copy of their Fire Safety Program and Hot Work Permit Program.

Permit Authorizing Individual (PAI)

- Investigate the hazards likely to be present in the work location. Note flammable materials, hazardous processes, combustible storage or other potential fire hazards that warrant specific precautions.
- Ensure the protection of combustibles from ignition by the following means:
 - ◆ Move work to a location that is free from combustibles.
 - ◆ If the work cannot be moved, ensure the combustibles are moved to a safe distance or have the combustibles properly shielded against ignition.
 - ◆ Ensure that hot work is scheduled at the most safe time, perhaps when the exposure to fire from combustible materials or hazardous operations is reduced.
 - ◆ Determine that fire protection and extinguishing equipment are properly located at the site.
- Make a final checkup 30 minutes after the completion of the hot work operations to detect and extinguish possible smoldering fires.
- Inspect the work area at least once per day.

Fire Watch

A Fire Watch should be provided whenever:

- Combustible materials in building construction or contents are closer than 35 feet to the point of the operation.
- Combustible materials are more than 35 feet away but are easily ignited by sparks.
- Wall or floor openings within a 35-foot radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.

If required, the Fire Watch should be maintained for at least 30 minutes after completion of hot work operations in order to detect and extinguish smoldering fires.

- Ensure that safe conditions are maintained during hot work operations.
- Have the authority to stop the hot work operations if unsafe conditions develop.
- Have fire extinguishing equipment on hand and be well trained in its use.
- Be familiar with the facilities and procedures for sounding an alarm in the event of a fire.
- Watch for fires in all exposed areas and try to extinguish them only when the fires are obviously within the capacity of the equipment available.
- Where fires are not within the capacity of extinguishing equipment, sound the alarm without delay and notify the fire department.

Hot Work Permits

Before hot work operations begin, a written Hot Work Permit issued and signed by the Permit Authorizing Person (PAI) is required. The following safety controls are suggested:

- Hot work equipment to be used is approved, in satisfactory condition and in good repair.
- Where combustible materials are on the floor, the floor is swept clean for a radius of 35 feet.
- Combustible floors and floor coverings are kept wet, covered with damp sand or protected by noncombustible or fire-retardant shields or welding curtains.
- Openings or cracks in walls, floors, or ducts within 35 feet of the site should be covered with noncombustible materials to prevent the passage of sparks to adjacent areas.
- Conveyor systems that might carry sparks to distant combustibles are shielded.
- Hot work should 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 should not be undertaken if the work is close enough to cause ignition by conduction. This includes pipe-thawing operations.
- Fully charged and operable fire extinguishers that are appropriate for the type of possible fire must be available immediately at the work area. Extinguishers should have a current inspection and service tag.
- Do not weld or cut in atmospheres containing reactive, flammable or toxic gases, vapors, liquids or dusts.



SAMPLE HOT WORK PERMIT

A Hot Work Permit is required for welding, brazing, soldering, grinding, cutting, thawing pipes, torch-applied roofing or any operation involving open flames or which produces heat and/or sparks.

This permit must be signed and posted in the work area!

Date: _____

Time issued: _____

AM ☐ PM ☐

Building/Location: _____

Department: _____

Special precautions required:

The location where this work is to be done has been inspected. Necessary precautions have been taken and permission is granted for this work.

Permit expires on _____ (date) at _____ (time)

AM ☐ PM ☐

Signed: _____

Permit Authorizing Individual (PAI)

Final Check

Work was completed on _____ (date) at _____ (time)

AM ☐ PM ☐

The work area and all adjacent areas to which sparks and heat might have spread, including floors above and below and on opposite side of walls, were inspected 30 minutes after the work was completed and were found to be fire safe.

Signed: _____

Supervisor/Permit Authorizing Individual (PAI)

SAMPLE HOT WORK SAFETY CHECKLIST

Before approving any hot work permit, the Supervisor/PAI should inspect the work area and confirm that precautions have been taken to prevent fire. The PAI additionally has the responsibility and authority to stop any hot work where precautions are found not to be sufficient.

OK N/A General

- ☐ ☐ Fire sprinkler systems are in service.
- ☐ ☐ Hot work equipment has been inspected and is in good repair.
- ☐ ☐ If a contractor is performing the hot work, they are made aware of our requirements and have provided certificates of insurance.

Work within 35 feet

- ☐ ☐ Floors are swept clean of dust, lint and debris.
- ☐ ☐ Combustible floors are wetted down, covered with damp sand or are shielded with other non-combustible materials.
- ☐ ☐ Combustible walls or materials that cannot be relocated are wetted down or shielded with non-combustible materials (such as welding curtains).
- ☐ ☐ Wall and floor openings are covered.
- ☐ ☐ The area is cleared of flammable liquids, gases or other hazardous materials.

Work on walls or ceilings

- ☐ ☐ Wall construction and coverings are non-combustible.
- ☐ ☐ Hot work is not performed on or near exposed foam insulation or insulated sandwich panels.
- ☐ ☐ Combustibles are moved away from other side of wall.

Enclosed equipment

- ☐ ☐ Equipment is cleaned of all combustible residue.
- ☐ ☐ Containers have been purged of flammable vapors.

Fire watch

- ☐ ☐ To be provided during and 30 minutes after operations.
- ☐ ☐ Supplied with a fully charged and operable fire extinguisher.
- ☐ ☐ Trained in use of equipment and in sounding fire alarm.

Final check

- ☐ ☐ To be made 30 minutes and 60 minutes after the completion of any operation.

Signed: _____
Supervisor/Permit Authorizing Individual (PAI)

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