

To The Point Hot Work

CHUBB®



Hot Work is a Leading Cause of Structural Fires

Hot work is associated with a variety of industries and operations, including machining, facility maintenance, and construction. Examples of hot work operations include cutting and welding, heat treating, grinding, thawing pipe, hot riveting, and torch-applied roofing. Depending on the operation and equipment utilized, hot work produces radiant energy, hot metal, fumes, and sparks. As a result, there are potential fire and safety hazards associated with hot work activities.

- Cutting and welding are the most dangerous forms of hot work.
- In hot work fires, the most common items first ignited are:
 - Building structural members or insulation
 - Flammable or combustible liquids
- Most hot work fires are attributed to being too close to combustibles such as wood, paper, cloth, and plastic.
- Most hot work fires occur during lunch, breaks, and shift changes.

In the Headlines

Hollywood, CA – Workers using a blowtorch on the roof of a building facade at Universal Studios accidentally ignited a huge fire that swept through the back lot. The property damage is estimated to exceed \$25 million.

Las Vegas, NV – A fire at the Monte Carlo Casino was started by welders working on the roof without proper hot work permits or safety precautions. The fire forced the evacuation of 6,000 guests and resulted in an estimated \$100 million in damages and lost business.

Hot Work Permit Program

A Hot Work Permit is required for any operation involving open flames or producing heat and/or sparks and must be completed by a Permit Authorizing Individual (PAI) and posted at the site. The permit requires that safety precautions be followed before, during, and after the work has been completed.

Risk Engineering Services

Typical precautions include:

- Availability of sprinklers, hose streams, and fire extinguishers
- Equipment maintained in good repair
- Combustibles and flammable liquids removed from the work area
- Combustible floors wet down
- Wall and floor openings covered with a noncombustible material
- Fire watch provided during work and for 30 minutes after work has been completed, including during any work breaks
- Fire watch may be required for adjoining areas, above, and below
- Inspection of hot work area 30 minutes after job is completed

If these precautions cannot be taken, hot work should not be permitted.

Roles & Responsibilities

There are several roles that must be carried out to successfully complete hot work, whether done in-house or by outside contractors.

Management

- Designates a Hot Work Permit Authorizing Individual (PAI)
- Ensures that all individuals involved in hot work are familiar with local fire safety regulations and standards
- Ensures that all individuals are trained in safe use of equipment
- Ensures that all individuals understand emergency procedures in the event of a fire

Permit Authorizing Individual (PAI)

- Clears combustible materials (e.g. paper clippings, wood shavings, textiles) within a 35-foot (11 m) radius of the work area in all directions, horizontally and vertically, or arranges for shielding of combustibles
- Protects combustible floors with wet sand or fire retardant shields, and assesses shock hazards associated with wet floors

- Ensures that fire protection equipment is in working order
- Implements a fire watch
- Issues a hot work permit for a specific area on a specific date by a specific department or contractor
- Performs final check of work area 30 minutes after completion of hot work

Hot Work Operator

- Obtains PAI approval before starting work
- Ensures that equipment is in good, safe working order
- Ceases hot work if conditions become unsafe, notifying PAI or management

Fire Watch (in-house personnel or contractor)

- Understands site hazards
- Ensures safe conditions throughout hot work process
- Has authority to stop hot work if conditions become unsafe
- Has an extinguishing agent on hand and is trained in its use
- Sounds alarm if fire occurs

Compressed Gas Cylinder Storage & Handling

Compressed gas cylinder usage is often associated with hot work operations. Examples of compressed gases commonly used include propane, acetylene, oxygen, argon, helium, and carbon dioxide.

Compressed gas cylinders should be stored with the protective caps in place. Cylinders should be stored in the upright position and secured against tipping over.

Cylinder carts should include a chain or strap to secure the cylinder to the cart. Oxygen cylinders should be stored in compartmentalized areas and kept separate from flammable gas cylinders, such as propane and acetylene.

Prohibited Areas for Hot Work Operations

- Any area not authorized by management
- Any area where the sprinkler system is impaired or shut down, unless a fire watch is established as part of a sprinkler system impairment program
- Any area or vessel where flammable or combustible gases, vapors, or dusts could be ignited by hot work operations, including drums, tanks, and vessels presently containing such materials or unclean vessels that previously contained materials

Contractor Management

Many hot work operations are performed by outside contractors. A contract or statement of work should define the work to be completed. Contractors should follow hot work policies and procedures. In a recent 15-year study, 67% of hot work related losses were caused by contractors. Certificates of insurance should be obtained from the contractor with limits of liability consistent with work performed and associated hazards.

Resources

NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

OSHA 29 CFR 1910 Subpart Q Welding, Cutting, and Brazing

ANSI Z49.1

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For more information about protecting your business, contact your local Chubb risk engineer or visit us at www.chubb.com/engineering.

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