

# Fire prevention during hot work

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Received: 25 August 2014 / Accepted: 11 February 2015 / Published online: 25 February 2015  
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**Abstract** This document addresses provisions to prevent loss of life and property from fire or explosions as a result of hot work and provides guidance for property owners and managers, supervisors, employees, and contractors who manage, supervise, and perform hot work. It does not address the health effects of working in high-temperature environments.

**Keywords** Health and safety · Operators

## 1 Scope

This document addresses provisions to prevent loss of life and property from fire or explosions as a result of hot work and provides guidance for property owners and managers, supervisors, employees, and contractors who manage, supervise, and perform hot work. It does not address the health effects of working in high-temperature environments.

## 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

- Designated hot work area—A permanent location designed and approved for safe hot work operations.

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Doc. IIW-2545, recommended for publication by Commission VIII “Health, Safety and Environment”.

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- Fire watch—The act of watching for the occurrence of fires. This is usually done with the intent of detecting fires early so that they can be extinguished quickly and damage to life and property can be prevented or minimized
- Hot work—Any open flame-, spark-, or heat-producing activity typically associated with but not limited to cutting, welding, grinding, or brazing operations as part of maintenance or construction activities.
- Hot work operator—Person performing hot work operations.
- Hot work plan—Writing rules for the safe performance of hot work.
- Temporary hot work area—Any area that does not meet the requirements set for a designated hot work area.

## 3 The hot work plan

Performing hot work safely requires that appropriate precautions are planned in advance before commencement of hot work, during the work, and after completion of the work. These safety precautions are contained in the hot work plan. In countries where a hot work permit system is required, the guidance in this document may not be adequate for compliance with those countries’ legal requirements. The hot work plan should address the following.

### 3.1 Permissible areas

Hot work should only be performed in areas that are or have been made fire safe. Hot work should be performed in either designated hot work areas or temporary hot work areas that have been made fire safe. Hot work at temporary hot work areas should only be performed if it cannot be performed at a designated hot work area.

#### 3.1.1 Designated hot work area

A designated area shall be a specific area designed or approved for hot work, such as a maintenance shop or a detached

outside location that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas.

### 3.1.2 Temporary hot work area

A temporary hot work area is any location other than a designated hot work area that is made fire safe by removing or protecting combustibles from ignition sources.

## 3.2 Safety precautions before performance of hot work

Hot work safety requires assessment of whether there is any risk of fire as a consequence of the work and implementation of all safety measures as required in the hot work plan:

- Identify the risks involved in the hot work.
- Inspect all floor, ceiling, and wall structures, including hollows, and define the necessary safety measures.
- Block off and shield all openings and lead-throughs in the structures.
- Determine if the generation of explosive atmospheres is possible during hot work. If necessary, measure the gas concentration of flammable gases in the work area and ventilate the area sufficiently to eliminate the risk of gas ignition.
- Clean and, as necessary, provide fire protection in the surrounding facilities.
- Wet down combustible surfaces before hot work if needed to prevent fires. Protect against electrical shock if arc welding and allied processes are planned.
- Remove or protect all combustible and inflammable machines, equipment, and structures by screening off or covering with fire-resistant materials. Drums of flammables substances and debris such as paper, wood, textiles, plastic, foam, and dust are examples of materials that should be removed or protected.
- Maintain a combustible-free zone of 15 m as flying sparks, spatter, and molten metal can travel that distance and cause fires.
- Ensure there is adequate space between workers.
- Prevent heat conduction and generation of sparks to the surrounding facilities through pipes, ventilation conduits, etc.
- Be sure that the fire watch personnel are available and equipped with suitable fire extinguishers.
- Determine if fire detectors and/or sprinkler systems need to be disconnected to avoid unnecessary alarms. The size of the area to be disconnected should be limited according to the need, and the area should be monitored. Only authorized persons should work on the fire detectors or sprinkler systems as generally it is not advised to

disconnect alarms and sprinkler systems. It may be a violation of local laws to do so.

- Ensure that all the personnel working at the site know how to make an emergency call and know how to use the fire extinguishers.
- Ensure that all the personnel working at the site know the exits to be used in emergency situations.
- Properly signpost and restrict access to the hot work area if necessary.

## 3.3 Safety precautions during hot work

During the hot work, care should be taken to ensure that all the safety precautions are implemented as required in the hot work plan:

- Ensure suitable fire extinguishers are available at the hot work site.
- Maintain the fire watch throughout the duration of the work, including breaks.
- Monitor for the presence flammable gases at the site and ventilate as required.

Should the risk of fire increase during the process, for example, during disassembly or assembly, the effects of the changed situation should be evaluated and the safety precautions should be adjusted, as necessary.

## 3.4 Safety precautions after completion of hot work

Accomplish the safety precautions after completion of the hot work as required in the hot work plan:

- Inspect the work site and the surrounding facilities for evidence of fire or hazardous conditions.
- Maintain the fire watch for at least an hour after completion of hot work, including breaks (the fire watch may need to be extended beyond 1 h if conditions warrant).
- Close the valves on the gas cylinders and gas outlets and relieve the pressure from the gas hoses. Move the cylinders to a safe place.
- Reconnect the disconnected fire detectors and/or sprinkler systems.

## 3.5 Fire watch

The fire watch personnel should understand and accomplish their responsibilities as required in the hot work plan:

- Understand the inherent hazards of the work site and of the hot work.

- Ensure safe conditions are maintained during and after hot work operations.
- Suspend the hot work operation if unsafe conditions develop.
- Maintain suitable fire extinguishing equipment close at hand and know how to use it.
- Be familiar with the facilities and procedures for sounding the alarm in the event of a fire.
- Know the evacuation strategy.
- Watch for fires in all exposed areas and try to extinguish them only when the fires are within the capacity of the available equipment. If the fire is not within the capacity of the equipment, the fire watch personnel should sound the alarm.