HOT WORK

Risk Control Guide

Introduction and Scope

Hot work is defined as any operation that involves open flames or produces heat or sparks, e.g. cutting, grinding, brazing, soldering, welding, chipping, hot riveting, use of blow lamps and blow torches and bitumen or tar boilers.

Inadequately controlled hot work is one of the most common causes of fire worldwide.

Managing hot work means preventing all hot work losses and having absolute control over hot work activities. This includes any activities where the management of hot work has been delegated to a third party (e.g. project work being undertaken in the UK under the Construction, Design and Management Regulations).

Hot Work Management Process & Hot Work Permit

A good standard of control is more likely to be achieved where a formal permit to work system is in force, issued and signed off by a trained and experienced person who has the authority to ensure compliance with the procedures.

All hot work by contractors' personnel, and by your own employees, outside maintenance workshops should be managed using the hot work permit system.

A sample hot work permit is provided at the end of this document.

General Precautions

- Is there a safer "cold work" alternative to using hot work?' If yes, then this should always be the option taken.
- If "cold work" is not an option then wherever possible, remove items subject to hot work to a safe area designated for hot work.
- Hot work should only be carried out by trained and competent personnel.
- All equipment should be thoroughly inspected before use and confirmed to be in good condition with all safety devices in place and operational.
- Blow lamps and blow torches should be lit for as short a time as possible before work commences and extinguished immediately after work ceases. In no circumstances should they be left unattended when lit. Lighting up should only be carried out in accordance with manufacturers' instructions.
- If bitumen/tar boilers, lead heaters and similar equipment must be taken onto roofs, a non-combustible heat insulating base must be provided to protect the roof. The equipment must be sited on a firm and level surface where spilled material can easily be controlled. Gas cylinders should be at least 3 metres from the burner.
- Hot air guns are a particular source of danger as no flame is apparent. When using these appliances, the same safety measures should be observed as for other forms of hot work.
- In sprinkler-protected premises hot work should ideally be postponed if the sprinkler system is impaired.
- When hot work is being undertaken in premises fitted with automatic fire detection systems, it may be necessary to isolate the detector zone where the work is being carried out. The zone should be reinstated as soon as the work has been completed.
- When work is completed, all hot waste materials should be removed and disposed of safely.
- A trained person, not directly involved with the work, should provide a continuous fire watch during and for at least 1 hour following each period of work to detect and extinguish any incipient burning in the work area and all adjoining areas to which sparks and heat could spread. A fire watch should also be maintained during any break periods.

Site Preparation

- Clear the area for at least 10 metres around the hot work process. Remove all combustible materials and flammable liquids and sweep floors clean.
- Protect everything that cannot be removed. All combustible materials, construction elements and surface finishes should be protected using non-combustible material or purpose-made blankets, drapes or screens.

- Walls, floors and ceilings should be checked for any openings, holes or gaps through which sparks or molten metal could pass. These should be blocked off with non-combustible materials.
- Before carrying out work on one side of a wall or partition an examination should be made of the area on the other side to ensure that any combustible materials are not in danger of ignition by direct or conducted heat. Heat may be readily conducted where walls are metal or where metal items such as pipes, beams or bolts penetrate to the other side of the wall.
- Hot work should never be carried out in an atmosphere containing flammable vapours or combustible dusts. Where a hazardous atmosphere is suspected, air samples should be taken and work only allowed to commence when the atmosphere has been confirmed to be non-flammable or non-combustible by a competent person.
- If there is a risk that the flammable or combustible atmosphere may re-occur, further testing of the atmosphere will be necessary.
- The area should be well ventilated to prevent the build-up of toxic, flammable or combustible atmospheres.
- Have fire-fighting equipment ready. The fire watcher should be equipped and trained in the use of fire-fighting appliances. As a minimum these should consist of either a hydraulic hose reel or at least two approved and certificated 9 litre water type extinguishers. Water must not be used on fires involving electrical arc welding equipment and in these circumstances carbon dioxide or dry powder extinguishers should also be provided.
- Where hot work is being undertaken on composite building panels or similar construction elements, the type of insulating materials behind the metal or other non-combustible surface should be assessed. If combustible materials (e.g. foam plastic type such as polystyrene, polyurethane or polyisocyanurate) are identified or suspected, under no circumstances should hot work be allowed on such panels and alternative methods should be employed. Cold stores, for example, in the food processing industry, frequently incorporate large amounts of combustible insulating materials in both wall and ceiling panels.

Hot Work Permit

CONTRACT TITLE:	PERMIT NUMBER:

Applicable to all operations involving open flames, heat or sparks, e.g. cutting, grinding, brazing, soldering, welding, chipping, hot riveting, use of blow lamps and blow torches and bitumen or tar boilers.

SECTION 1 – DETAILS OF OPERATION

Location of Work:		
Nature of Work to be Undertaken:		
Issue of Permit:	Date:	Time:
Expiry of Permit*:		Time:

*It is not desirable to issue permits for extended periods. Original permits should be signed off and new permits should be issued where work extends beyond the end of a working shift or day.

Special Precautions:	

PRE-WORK CHECKLIST – to be completed by the issuer of the permit (formally trained and authorised). Tick once check is complete.

A trained person, not directly involved with the work, will provide a continuous fire watch during and for at least 1 hour following each period of work to detect and extinguish any incipient burning in the work area and all adjoining areas to which sparks and heat could spread. A fire watch will also be maintained during any break periods.	☐
At least 2 suitable portable fire extinguishers are available within the area of hot work operations and all persons involved and undertaking fire watch duties are trained in their use. Any sprinkler protection should remain fully operational wherever possible. Automatic fire detection should be isolated only in the area where hot works is undertaken and only for the period of the work.	☐
Inspections have been completed and combustible materials and flammable liquids have been removed from: i. all areas within 10 metres of the hot work ii. floors above and below, and areas on the other sides of walls, screens or partitions which may be in danger of ignition either directly or from conducted heat.	☐
If there are any: i. combustible materials that cannot be removed ii. holes or gaps in walls, floors or ceilings where sparks could pass through they have been covered by non-combustible material or purpose-made blankets, drapes or screens.	☐

Combustible floors in the designated area are covered with sheets of non-combustible protective material or wetted and covered with sand.	☐
If combustible materials (e.g. foam plastic type such as polystyrene, polyurethane or polyisocyanurate) are identified or suspected, hot work will not be allowed on such panels and alternative methods will be employed.	☐
Adequate ventilation is provided. Enclosed equipment such as tanks, vessels, etc, have been emptied and tested to ensure they are free of flammable vapours, combustible/explosive dusts or other dangerous materials.	☐
Any gas pipes or other services adjacent to or below the area of hot work have been isolated/protected.	☐
All persons carrying out the hot work and fire watch know how to raise the fire alarm and are aware of emergency procedures.	☐

I declare the above has been made known to the operative completing the work. I consider the area is safe for the operative to commence operations.

Signed:	Authorising Person:
Date:	Time:

SECTION 2 - ACCEPTANCE BY OPERATIVE

I acknowledge receipt of this permit and understand the precautions/comments described in Section One. Neither I nor the persons under my control will work on any other activity or location other than those specified in Section One.

Signed:	Position:
Date:	Time:

SECTION 3 – CLEARANCE ON COMPLETION OF HOT WORK – TICK ONCE CHECK IS COMPLETE

The work area and all adjacent areas to which sparks and heat might have spread (such as floors below and above and areas on other sides of walls) have been inspected and found to be free of smouldering materials and flames.	☐
All hot waste materials have been removed and disposed of safely.	☐
Any isolated automatic fire detectors or detection zones have been reinstated.	☐
All equipment, including gas cylinders, has been safely shut down/isolated and removed to a safe area.	☐
A continuous fire watch and regular inspections will be completed for a period of at least 60 minutes after completion of the Hot Work as specified in Section One.	☐

I declare that the work described in Section One is complete and the precautions noted above have been complied with. The area has been inspected and is free of fire risk and all tools/equipment have been withdrawn.

Signed:	Authorising Person*:
Date:	Time:

*Authorising Person should be the same person who initially authorised the work and issued the permit.

SECTION 4 – CANCELLATION

Hot Work has been completed and this permit is cancelled. I have received the copies of the permit back from the operative completing the work and the area has been inspected and is free of risk.

Signed:	Authorising Person*:
Date:	Time:

*Authorising Person should be the same person who initially authorised the work and issued the permit.