

PO Box 367  
Annerley QLD 4103  
Phone: 07 3435 5111  
Fax: 07 3891 1356

PO Box 3037  
Auburn Vic 3123  
Phone: 03 9815 6600  
Fax: 03 9818 0255

PO Box 473  
Burwood NSW 1805  
Phone: 02 8745 2045  
Fax: 02 9745 5969

PO Box 291  
Fullarton SA 5063  
Phone: 08 8379 5301  
Fax: 08 8338 6091

## Hot Work Procedures

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### What is Hot Work?

Hot work can be defined as any temporary or permanent operation that produces flames, sparks, or heat. Some examples of hot work operations include welding, grinding, thermal/oxygen cutting or other related heat producing processes. The use of these operations outside safe areas is where the real risk arises, especially during maintenance and construction activities, which are the causes of many serious fires in facilities. In some cases, conditions within a facility are just so inherently dangerous that hot work cannot be conducted safely and should be avoided. Other times, companies, employees, or contractors fail to follow proper hot work safety guidelines, or are not aware of the hazards and the steps that are necessary to mitigate or prevent a hot work fire.

The National Fire Protection Association in the USA estimates some 6% of all common fires in industrial and commercial premises are caused by poorly managed hot work procedures. Evidently, most of these are the result of carelessness and ineffective supervision during such operations.

### How Do We Manage Hot Work?

To achieve effective hot work management, proper planning, training and adequate supervision is necessary to reduce the risks associated with hot work operations. These precautions could include:

#### 1. Using Alternative Methods

Prior to commencing, consider and determine whether there are alternative methods of performing this task without the hazard of introducing a heat/fire source, such as bolting instead of welding or removing joints instead of cutting, etc.. Hot work should only be authorised where a safer method of work is not available.

#### 2. Designate a "No Hot Work Area"

Prohibit hot work in areas where hot work cannot be conducted safely or where extensive preparation and planning are required to make the area/equipment fire-safe. These areas should be identified in a site plan and included in the site's procedure document. If possible, signs should be displayed at the location to identify these areas.

#### 3. Set Up a "Fixed Hot Work Station"

Where possible, relocate the hot work to a suitable and isolated fixed hot work station. Maintain the station free of combustible enclosures or with an open space of at least 11m. If materials or equipment cannot be relocated and hot work is unavoidable, protect any combustible material, with metal guards or by flameproof curtains or covers, or use the least hazardous form of hot work that will get the job done.

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#### 4. Implement a “Hot Work Permit System”

Experience has shown that an acceptable standard of care and supervision is far more likely to be achieved where a documented hot work permit system is enforced. Therefore, a precaution checklist should be established to highlight the important steps to take during hot work operations.

A Responsible Officer, who is appointed by senior management, should be responsible for all safe execution of hot work on site. The Responsible Officer must ensure:

- The Hot Work Permit Form is completed correctly (sample included in Appendix 1);
- The area is prepared appropriately to conduct hot work;
- The equipment to be used is safe and in appropriate condition;
- Appropriate fire protection measures are in place;
- A trained fire watch person stays with the operator of the hot work until completion;
- A suitable duration period for the permit is in place;
- The work area is inspected 60 minutes post the completion of the work to confirm safe.

If an incident was to arise, the Responsible officer should be advised. An investigation should be conducted to determine whether the incident was a result of inadequate controls implemented or whether operators failed to comply with controls defined in the permit.

#### 5. Supervision and Fire Watch

Supervisors should be aware of the need to control the hot work operations of contractors and sub-contractors. Whilst it is not expected that all contractors be fully supervised, an appropriate level of supervision should be provided for contractors depending on the nature of the task being conducted. For hot work, this may require an increased level of supervision during initial hot work activity, and programmed inspections of the hot work area thereafter.

A trained person not directly involved with the hot work, should also provide a continuous fire watch during and after the hot work period is completed, for at least one hour. They would be responsible to monitor, detect and extinguish any incipient burning in the work and adjoining work areas to which sparks and heat may spread. As a final check, the area should be monitored for an additional 3 hours and signed off, once it is considered safe.

#### 6. Training

Frequent training should be given to all relevant personnel to make them aware of the dangers associated with hot work and ensure that they display an understanding of the procedures set in place. Staff and contractors should also be familiar with the form back to front and fully comprehend why it is such a necessity that they are trained in the procedure. Trained personnel who know how to use fire protection equipment and are familiar with site emergency procedures will further ensure unsafe conditions do not develop when hot work is performed.

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## 7. Contractor Management

Facility owners and contractors should work together to ensure there is a clear understanding of the fire hazards that exist within the area, since contractors are most likely to conduct hot work on site. By implementing a contractor approval process, contractors will need to demonstrate that they have current and an appropriate level of public and product liability insurance in place.

Hot work is considered one of the top three primary causes of fire in industrial and commercial premises alongside electrical and arson. Fires caused by hot work not only produce major business interruption and costly property losses but puts human lives at risk. One loose spark is all it takes to burn a building down and this is why every hot work safety precaution is important and should be followed.

# Sample Hot Work Permit

Section A: To be completed prior to work		Checks / Precautions (Tick if adequate)	
<b>Permit ID Number:</b>		<p><b><u>Assessment of Activity</u></b></p> <input type="checkbox"/> No alternative to hot work	
<b>Location of work:</b>			<input type="checkbox"/> No practical means of relocating the hot-work activities to a safer area
<b>Description of work:</b>			<input type="checkbox"/> No insulated sandwich panel will be worked upon or lie directly adjacent to the hot-work activities conducted
<b>Equipment to be used:</b>			
<b>Date of Issue:</b> ___/___/___			<b><u>Area Preparation</u></b>
<b>Time of issue:</b> * Duration period must not be more than 8 hrs			<input type="checkbox"/> Work area is clear of flammable liquids, gases or vapours and combustible materials.
<b>Permit Begins</b>	<b>Permit Expires</b>		<input type="checkbox"/> Floors swept clean
<b>Date:</b> ___/___/___	<b>Date:</b> ___/___/___		<input type="checkbox"/> Fire resistive barriers deployed – i.e. barricades, warning signs, spark and flash screens in place.
<b>Time:</b> _____ am / pm	<b>Time:</b> _____ am / pm		<input type="checkbox"/> Area secure
<b>Area Gas Testing</b>			<input type="checkbox"/> Area adequately ventilated
* Test for the presence of flammable gas and flammable vapour within 15metres from the hot work area.		<b><u>Fire Protection</u></b>	
<b>Date of test:</b> ___/___/___	___/___/___	<input type="checkbox"/> Sprinklers in service (where installed)	
<b>Time of test:</b> _____ am / pm	_____ am / pm	<input type="checkbox"/> Detection systems isolated and impairment form completed.	
<b>Percentage of L.E.L Detected:</b>		<input type="checkbox"/> Portable extinguishers and fire hose reels available	
<b>Is hot-work safe to proceed:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b><u>Firewatch</u></b>	
<b>Testing Officer</b> (Print full name):		<input type="checkbox"/> If required, has a firewatcher been organised	
<b>Signature of Testing Officer:</b>		<input type="checkbox"/> Firewatcher appropriately trained	
<b>The following conditions and precautions were observed:</b>			
_____			
_____			
<b>Operator</b> (Print full name):		<b>Signature of Operator:</b>	
<b>Fire Watch</b> (Print full name):		<b>Signature of Fire Watch:</b>	
<b>Responsible Officer</b> (Print full name):		<b>Signature of Responsible Officer:</b>	
<b>Section B: To be completed after work</b>			
The worksite has been inspected by me at the expiry of this hot-work permit and declared safe for normal operations to resume.			
_____			
(Print Full Name):		(Signature):	