



نظام الشارقة للسلامة والصحة المهنية
Occupational Safety & Health Sharjah

حكومة الشارقة
هيئة الوقاية والسلامة
Government of Sharjah
Prevention And Safety Authority



Code of Practice

Management of Hot Work

OSHJ-Cop-07



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1 Introduction

Hot work is usually defined as any open flame, spark or heat producing activity and typically consists of cutting, welding, grinding and brazing operations. Hot work is undertaken in different work activities but regularly undertaken during construction and maintenance projects and is a high risk activity that requires careful and active risk management.

2 Purpose and Scope

This Code of Practice (CoP) has been developed to provide information to entities to assist them in complying with Sharjah Occupational Safety and Health System requirements.

This Code of Practice (CoP) defines the minimum acceptable requirements in the Sharjah Occupational Safety and Health System, and entities can apply practices higher than, but not lower than those mentioned in this document, as they demonstrate the lowest acceptable level of compliance in the Emirate of Sharjah.

3 Definitions and Abbreviations

Entities:	Government Entities: Government departments, authorities or establishments and the like in the Emirate. Private Entities: Establishments, companies, enterprises and economic activities operating in the Emirate in general.
Risk:	Is the combination of likelihood of the hazard causing the loss and the severity of that loss (consequences).
Risk Assessment:	The systematic identification of workplace hazards and evaluation of the risks associated. This process takes existing control measures into account and identifies and recommends further control measures where required.
Hazard:	Anything that has the potential to cause harm or loss (injury, disease, ill-health, property damage etc).
Competence:	The combination of training, skills, experience and knowledge that a person has and their ability to apply all of them to perform their work.
Hot Work:	Any work activity involving an open flame or generates a spark or heat.
Welding:	Is a fabrication process that joins materials, by using high heat to melt the parts together and allowing them to cool, causing fusion.
Backfire:	The momentary retrogression of the flame into the torch nozzle outlet.
Flashback:	An explosion or flame that progresses through the torch, hoses, regulators, and into the cylinder.
Flashback Arrestor:	A safety device to stop the flame or reverse flow of gas back into the supply line.



Manufacturer's Manual: The instructions, procedures and recommendations provided by the manufacturer to ensure the safe operation, maintenance and repair of the equipment.

4 Roles and Responsibilities

4.1 Entity Responsibilities

- Ensure all work involving hot work is adequately assessed;
- Ensure effective procedures are in place to manage hot work activities;
- Ensure resources are available to implement adequate control measures required for hot working activities;
- Provide adequate safety information, instruction, supervision and training and ensure that employees involved in hot work are competent;
- Ensure equipment provided for hot work activities is adequately selected for the task;
- Ensure hot work equipment is inspected, maintained and used safely;
- Ensure that safety devices are in place, routinely checked and maintained and checked after any repairs or modifications by a competent person;
- Ensure health issues related to welding are identified and adequately managed.

4.2 Employee Responsibilities

- Not endanger themselves or others;
- Those involved in hot work to inspect hot work equipment before each use and report any defects;
- Follow precautionary control measures to ensure work activities are performed safely;
- Cooperate with the entity and receive safety information, instruction, supervision and training.

5 Requirements

Hot work includes work activities, such as grinding, welding, brazing, thermal or oxygen cutting or heating, and other related heat or spark producing operations. Undertaking hot work in an area where flammable liquids, vapour or gases, combustible liquids, materials, dust or fibres, or other flammable or explosive substances are present creates a significant risk of fire or explosion.

5.1 Risk Assessment

The entity shall assess the risks in the workplace and take all reasonably practicable precautions to ensure the safety of employees and others who could be affected by hot work activities. In general, to control the risks from hot work the entity shall ensure that either:

- Hot work activities are conducted in a designated hot work area; or



- Any hot work conducted outside a designated hot work area or as a non-routine activity must be controlled with a hot work permit to work.

Before carrying out any hot work, there shall be a careful assessment of the following risk factors, including but not limited to:

- Fire caused by heat, sparks, molten metal or direct contact with the flame;
- Explosion when cutting up, repairing or working in the vicinity of drums, tanks, pipes, vessels, which contain or may have contained flammable materials;
- Fire or explosion caused by a gas leak, backfire or flashback;
- Fire or burns from the misuse of oxygen;
- Burns from contact with the flame, explosions or hot metal;
- Fumes, vapours and gases generated during hot work;
- Electricity and radiation generated when using electric welders;
- Crush or impact injuries resulting from explosion or when handling cylinders.

Further information on risk assessment can be found in OSHJ-CoP-01: Risk Management and Control.

5.2 Designated Hot Work Areas

A designated hot work area is a permanent location designed for hot work activities, these areas do not generally require a hot work permit to work, provided the entity ensures it meets the following criteria:

- The area is free of combustible and flammable materials;
- The working surface for use of soldering or brazing work activities is not made of combustible materials;
- The designated hot work area is segregated from other areas and access to the area is restricted;
- Equipped with suitable and adequate fire protection;
- Has adequate ventilation;
- Has been regularly inspected by a competent person appointed by management.

5.3 Permit to Work

The entity shall ensure that where hot work activities are to be conducted outside of a designated hot work area or as a non-routine activity, the hot work must be conducted under a written permit to work system. The hot work permit shall specify the following, including but not limited to;

- Details of the work activities to be carried out;
- How and when the hot work activities will be conducted;
- What safety and health precautions are required;



- Who is responsible for checking it is safe for the work to start;
- Who will supervise and check the work is conducted safely;
- Who is responsible for confirming the work activities are completed.

A written permit to work system should result in a higher standard of safety and supervision.

The hot work permit system shall also apply to contractors and subcontractors. Hot work shall not be carried out unless it is authorised and properly supervised by an experienced manager or supervisor who is competent and has knowledge of the work to be carried out, the risks involved and the precautions to be taken.

Further information on permit to work can be found in OSHJ-GL-16: Permit to Work.

5.4 Hazardous Areas

A hazardous area is an area, either indoors or outdoors, that contains, or may contain, flammable substances. The flammable substance may be a liquid, gas, vapor or dust.

The entity shall ensure that adequate precautions are taken before commencing any hot work in hazardous areas, including areas with oxygen deficiency, including but not limited to:

- A hot work permit is generated prior to the commencement of work activities;
- The issuer of the hot work permit must be satisfied that the hot work has been adequately assessed and planned and can be safely undertaken he/she can then issue the hot work permit in accordance with OSHJ-GL-16: Permit to Work.
- The responsible person for the hot work activity shall ensure the safety arrangements, include but not limited to:
 - All fire hazards are identified and control measures are in place;
 - The hot work area has adequate ventilation;
 - The hot work area is secured from unauthorised personnel;
 - Safe access and egress to and from the hot work area is provided;
 - Hot work equipment is suitably located, including fire fighting equipment;
 - Provision of a fire watcher;
 - Testing for the presence of flammable gases or vapours in the hot work area.
- When the hot work is completed the hot work permit shall be signed off in accordance with OSHJ-GL-16: Permit to Work.

5.5 Hot Work in Confined Spaces

Hot work in confined spaces brings additional risks to those encountered in well-ventilated workrooms or in the open air workplace. The following factors should be considered during risk assessment of the confined space, including but not limited to:

- Access and egress can be restricted;
- A greater risk of asphyxiation exists;



- The consequences of a fire or explosion are potentially more severe;
- A greater likelihood of an accumulation of gases from leaks;
- Welding fumes may present a significant hazard in confined spaces.

Further information on confined spaces can be found in OSHJ-CoP-06: Management of Confined Spaces.

5.6 Hot Work Equipment

5.6.1 Electric Equipment

The entity shall ensure that when using an electric arc cutting and welding equipment, the following factors should be considered, including but not limited to:

- The equipment shall have adequate capacity of the power supply source to handle the load demand of the welding operation;
- The equipment is used as per the manufacturer's manual;
- The frame or case of the equipment should be properly earthed;
- A suitable disconnecting switch or controller should be located near the equipment;
- The equipment should be protected by a suitable fuse or circuit breaker on a separate circuit;
- Electrode holders should be properly insulated to avoid any undesirable exposure of live conductor other than the welding electrode, that can be inadvertently touched by the welder;
- Welding cables should be insulated, of robust construction and of sufficient size to carry the welding current safely;
- Welding cable connections should be suitably insulated to avoid the exposure of conductive parts;
- The welding return should be firmly connected to the workpiece as close to the point of welding operation as possible to avoid any uncontrollable and undesirable stray current flow that would cause electric shock and/or fire hazard.

5.6.2 Gas Equipment

When using gas cutting and welding equipment, the following factors should be considered:

- The use of safety devices that must meet the criteria of the UAE or any higher internationally recognised standard;
- Non-return valves - Are provided at each blowpipe inlet connection to reduce the risk of oxygen reverse flow into the fuel gas line and vice versa;
- Flashback arresters - Are a modern variation of a flame arrester, incorporating pressure or temperature actuated cut-off valves and should be fitted at the pressure regulator outlet connection of all acetylene cylinders or outlet points from acetylene distribution systems and manifolds;



- Flow rates need to be carefully controlled, to ensure that the flame arrester does not become blocked with flux residues;
- The use of the correct type of hoses and fittings as specified by the manufacturer's manual;
- Not to allow grease and oil build up on any of the equipment.

Before starting work activities:

- The gas equipment shall be checked to ensure the correct equipment is available for the gases being used, all safety devices are fitted and the equipment is not damaged;
- Equipment that has been or appears to have been modified may not be suitable and may be dangerous and should be examined before use by a competent person. Damaged or defective hose or hose assemblies should only be replaced or repaired by a competent person.
- Check all connections for leakage using gas testing equipment or a surfactant, such as a detergent solution. Where leaks are identified, the gas supply should be isolated and the leaking components taken out of service, replaced or repaired. A leak identified at a cylinder valve or pressure regulator connection, requires the cylinder to be removed to a safe place in the open air. A leaking fuel gas cylinder, shall be moved away from any source of ignition.

When a new oxygen supply is first connected to equipment the following actions shall be taken:

- Wipe the cylinder valve outlet and pressure regulator connection with a clean lint-free cloth;
- Ensure that both surfaces are clean and free from grease, grit and dirt;
- Before fitting the pressure regulator, slowly open the cylinder valve, then quickly close it again this is a procedure known as 'sniffing' to dislodge any contamination from within the cylinder valve. Cylinders of hydrogen should never be sniffed due to the risk of spontaneous ignition of the gas;
- Make the equipment connections;
- Very slowly open the cylinder valve with the pressure regulator outlet in the closed position;
- Slowly open the pressure regulator outlet.

Further information on the use of gases and air can be found in OSHJ-GL-13: Compressed Gases and Air.

5.7 Fire Protection

The entity shall ensure fire precautions are provided where hot work activities are taking place, including but not limited to:

- Portable fire extinguishing equipment;
- Fire blankets;



- Buckets of dry sand or fire extinguishers containing specially formulated powders, such as where there is a risk of metal fires;
- Presence of a fire watcher to detect and extinguish fires and sound the alarm if necessary.

5.8 Personal Protective Equipment

The entity shall provide suitable personal protective equipment for the hot work activities being conducted, including but not limited to:

- Eye, face and neck protection as required and depending on the hot work activity;
- Hand and arm protection against naked flames and hot surfaces in the form of chromed leather gloves or gauntlets which are fire retardant and suitable for welding activities;
- Flame retardant protective clothing for the rest of the body, such as overalls, caps, aprons and sleeves dependent on the hot work activity being conducted;
- Respiratory protection for hot work where toxic fume emissions from the material being worked on or surface coatings is present;
- Safety footwear with steel toe-caps capable of resisting a heavy falling object shall be worn to protect against injury when moving and handling materials.

Further information on personal protective equipment can be found in OSHJ-GL-07: Personal Protective Equipment.

6 Training

The entity shall ensure that employees involved in hot work activities are competent and have received formal training in the use of the equipment they are using.

The entity shall provide training in languages and in a format that employees understand, including but not limited to;

- The safe selection, inspection, use and maintenance of hot work equipment and the risks associated with using the equipment and the control measures to be implemented to reduce these risks;
- Permit to work system and risk assessment;
- Use of firefighting equipment, such as portable fire extinguishers, hose reels, fire blankets;
- Fire and emergency response procedures.

Periodic refresher training should be conducted to ensure employees competency is maintained, including but not limited to:

- Where training certification has expired;
- Where identified as part of a training needs analysis;
- Where risk assessment findings identify training as a measure to control risks;



- Where there is a change in legal requirements;
- Where incident investigation findings recommend refresher training.

The entity must record and maintain accurate training records of OSH training provided to employees.

Further information on training can be found in OSHJ-GL-26: Training and Competence.

7 Emergency Preparedness and Response

The entity shall be prepared for emergencies, an emergency plan is a document containing the actions the entity will take in an emergency. Performing hot work activities require the entity to have a robust plan to deal with emergencies.

The entity shall ensure the following, including but not limited to:

- If conducted under permit to work the emergency arrangements must be in place prior to the commencement of the hot work;
- Warning signs with information on what to do in an emergency are clearly and prominently displayed in Arabic, English and any other relevant language;
- Emergency response personnel are available who can take charge and make decisions on behalf of the entity during an emergency and liaise with emergency services;
- Emergency response personnel are available who are familiar with the work area ensuring the prompt evacuation of the workplace in the event of a fire;
- Adequate firefighting and first aid equipment is available for the type of hot work being conducted;
- Employees are trained in emergency response, including information of first aid arrangements and where first-aiders, first aid equipment and facilities are located;
- Employees are appointed as first-aiders and available at each location and each working shift where hot work is being conducted.

Further information on first aid can be found in OSHJ-CoP-16: First Aid at Work.

Further information on developing an emergency plan can be found in OSHJ-CoP-18: Emergency Preparedness and Response.



8 References

- OSHJ-CoP-01: Risk Management and Control
- OSHJ-CoP-06: Management of Confined Spaces
- OSHJ-CoP-16: First Aid at Work
- OSHJ-CoP-18: Emergency Preparedness and Response
- OSHJ-GL-07: Personal Protective Equipment
- OSHJ-GL-13: Compressed Gases and Air
- OSHJ-GL-16: Permit to Work
- OSHJ-GL-26: Training and Competence



9 Document Amendment Record

TITLE	Management of Hot Work		
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1	15 SEP 2021	New Document	N/A