



Hot work - fire safety essentials

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

Hazards associated with hot work.

- 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/explosion caused by a gas leak, backfire or flashback.
- Fire/burns from the misuse of oxygen.
- Burns from contact with the flame, explosions or hot metal.
- Crush or impact injuries resulting from explosion or when handling cylinders.

The essentials

- Appoint a responsible officer/person to:
 - inspect the site thoroughly before the work is done;
 - ensure that the work is conducted in a safe manner; and
 - authorise the work when conducted in or near any hazardous situation.
- Identify and control any fire hazard inside and outside the work area, including flammable or combustible liquids, gases, vapours, dusts, fibres, wood, paper, textiles, packaging, plastics, tyres, dry grass or other substances within 15 metres of the hot work.
- Consider other relevant hazards inside or outside the hot work area, for example the proximity of other staff, changing circumstances, environmental factors (eg wind condition, temperature, is there a total fire ban in place?), etc.
- Prior to beginning hot work on or near drums, tanks, pipes, vessels, etc.:
 - identify - previous contents and check material safety data sheet for that substance;
 - remove - caps, bungs and drain;
 - clean – method depends on the previous contents and circumstances.
The following cleaning methods may be used: water washing, steam cleaning, use of chemical solutions, mechanical cleaning, chemical cleaning and/or purging.
If equipment is divided into two or more compartments (eg a split fuel tank), each compartment requires to be cleaned in the same manner, even if the hot work is only carried out on one component;
 - inspect/test – for the presence of flammable gas or vapour ensure the concentration of the flammable gas or vapour is less than 5 percent of its lower explosion limit (LEL);
 - displace – as it is difficult to fully remove and detect residues of flammable gases and vapours in seams or crevices, displace the air with water or an inert gas.
- Conduct further testing or continuous monitoring, as required by the responsible officer.
- Cease hot work and take additional safety measures to ensure the safety of workers, where flammable gases or vapours exceed 5% of the LEL.

- Provide flashback arrestors on the operator's side of each regulator connection or discharge of a manifolded cylinder pack and to the blowpipe.
- Make arrangements to prevent any possible fires from off cuts, slag and electrode stubs.
- Ensure equipment is suitably located.
- Check equipment and hoses regularly for damage, faults or leaks and conduct regular maintenance to reduce the risk of gas leaks.
- Appropriately secure gas bottles in an upright position and protect them from damage or the uncontrolled release of its contents while being used, moved or stored.
- Properly ventilate the hot work area and where relevant ensure adequate fume extraction is in place as close as practicable to the point where the welding or allied process is done.
- Provide material safety data sheets for hazardous substances where relevant, for instance for flammable hazardous substances that were previously stored in drums or tanks.
- Never use oxygen to blow dust or particles from clothing benches or machinery as misuse of oxygen can result in oxygen enrichment and a much greater risk of fire.
- Provide suitable and accessible firefighting equipment in the work area.
- Isolate the work area where the hot work is done and provide safe entry and exit.
- Provide information to all persons involved or working in the vicinity of the hot work about the hazards and safety measures taken.
- Provide adequate personal protective equipment and clothing (PPE), including fire resistant clothing, boots, gloves, eye protection and respiratory equipment where relevant.
- Ensure adequate PPE is used by employees and contractors.
- Welders are provided with any assistance required and do not work alone, while carrying out hot work in or near any hazardous situation.
- Complete a hot-work permit, where relevant.
- Appoint a fire watcher if required, to ensure the safety of staff and equipment.
- Carry out an inspection to ensure that no smouldering materials remain, after hot work has been completed.

Train staff in

- Safe work procedures for welding and other hot work in accordance with Australian Standard AS1674.1 – 1997 Safety in welding and allied processes – Part 1: Fire Precautions
- Use and maintenance of required personal equipment and clothing.
- Use of firefighting equipment, such as portable fire extinguishers, hose reels, fire blankets.
- Evacuation procedures in case of a fire or other emergency.

Further information

- Australian Standard AS1674.1-1997 Safety in welding and allied processes – Part 1: Fire Precautions
- Safety alert: [Cutting metal drums with an angle grinder](#)
- Media statement: [Company fined \\$85,000 over death of worker in drum explosion](#)
- WorkSafe website: www.commerce.wa.gov.au/worksafe

A18657244