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Hot work explosion

17 August 2022

A 41-year-old worker suffered burns in an explosion during demolition works involving hot work at an old workshop pit in Narellan, NSW. The pit contained tanks yet to be removed, and the worker had been using an angle grinder in the pit when an explosion resulted in a fireball approximately 10 metres high.



The pit where the explosion occurred and the tank that ruptured.

Safety information

Flammable vapours/gases in the air that come into contact with ignition sources can cause fire or explosions and create a high risk of serious or fatal injury.

Risks from hot work, such as grinding and welding, include:

- fire or explosions when working on, or in the vicinity of, tanks or vessels which have contained flammable liquids, gases, or materials
- burns from flames, sparks, or hot/melted materials
- crush or impact injuries resulting from an explosion
- exposure to toxic fumes and vapours

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- suffocation due to depleted oxygen levels in the atmosphere.

Always treat the ullage¹ space in waste oil tanks as a hazardous atmosphere until testing has proven otherwise!

Consider 'reasonably practicable' control measures to manage the risks associated with hot work.

You must ensure:

- a risk assessment is performed before any work is undertaken including a review of the Safety Data Sheets (SDS) and consultation with other duty holders to determine previous contents of tanks and other containers prior to undertaking work
- a [Safe Work Method Statement \(SWMS\)](#) and hot work permit system that addresses works in contaminated or flammable atmospheres or artificial extremes of temperatures is developed and workers are trained in it
- any materials that could possibly be flammable, combustible or explosive in the work area are identified and removed as far as reasonably practicable
- cleaning methods are implemented, where practicable, to remove the presence of residue chemicals prior to works commencing
- non-flammable covers or screens are used to control sparks and flashes where removal of combustible material is not practical
- all services are located and isolated using lock out/tag out procedures prior to works commencing
- the work area is adequately ventilated and if required use intrinsically safe mechanical ventilation, to prevent explosive atmospheres developing. Flammable contents should be vented to a safe area that won't pose a risk to health and safety, e.g., worker exposure or fire
- appropriate controls are in place for any hot works that are to be conducted in a confined space and workers are trained in confined space work
- the atmosphere in a confined space during hot work is continuously monitored by using a calibrated gas detector operated by a competent person
- appropriate firefighting equipment is ready for use and workers have been trained in their use
- a fire watch person is utilised to monitor the hot work environment
- an exclusion zone is set up around the work area and appropriate signage is erected
- an emergency procedure is developed and implemented

¹ Ullage - the difference between the capacity of a receptacle and the net volume of the contents of the receptacle. *Australian Code for the Transport of Dangerous Goods by Road and Rail, 2018.*

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- all workers complete a site-specific induction and have the correct licencing for the type of work to be undertaken
- workers are wearing appropriate non-flammable personal protective equipment (PPE)
- a post work check for smouldering material is completed before leaving the work area.

Related guidance material

- [Welding Processes – Code of Practice](#)
- [Managing risks of hazardous chemicals in the workplace - Code of Practice](#)
- [Managing the risks of plant in the workplace – Code of Practice](#)
- [Confined Spaces – Code of Practice](#)
- [Australian Standard AS 1674.1 Safety in Welding and Allied Processes Part 1: Fire Precautions](#)
- [Video Safety Alert – Don't Cut Old Drums](#)
- [Video Safety Alert – Welding Safety](#)

Further information

- [Traumatic event management plan](#)
- [Mental health at work – NSW Government](#)
- [Speak Up Save Lives App](#)
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