Safety Alert

Pressure testing of pipes

This Alert highlights the potential for explosions when pressure testing water or sewer pipes with high pressure air and provides advice to prevent explosions.

May 2016

Background

This Alert has been revised and reissued after a recent incident (2016) where a plumber was seriously injured when struck by the temporary end-cap of a fire service after explosive venting during system leak testing with high pressure air.

In 2004, a worker was killed and another injured when struck by a 70kg temporary metal cap that blew off a 300mm diameter pipe during leak testing with high pressure air.

Safety issues

Air is compressible, unlike water, so when used for high pressure leak testing, the compressed volume of air stored in the pipe system is significant.

In a pipe or coupling failure, the volume of stored air will rapidly expand and release energy in an explosion, which puts employees and others (eg the public) at risk of death or injury.

Recommended control measures

An employer must, so far as is reasonably practicable, eliminate the risk of explosion when pressure testing water or sewer pipes. If the risk cannot be eliminated it must be reduced so far as is reasonably practicable.

Employers can eliminate the risk of explosion by **hydrostatic pressure testing** pipe systems using water or another suitable fluid.

Hydrostatic pressure testing only requires a relatively small amount of air to develop a high pressure, and is therefore only able to release a small amount of energy in a pipe or coupling failure.

Employers must ensure employees, before undertaking pressure testing:

- are instructed and trained in the:
  - testing method and equipment to be used
  - hazards and risks associated with the task
  - relevant inspection and testing procedures
- fully understand the specifications and procedures of the relevant water agency and the need comply with them at all times.

The employer must supervise the work as is necessary to ensure the work is done safely.

Hand operated testers similar to this one are suitable for testing pipes for system integrity and locating leaks.

Where it is not reasonably practicable to undertake hydrostatic pressure testing, **compressed air pressure testing** may be conducted to a maximum pressure (including pressure spikes) of 50 kPa.

If there are exceptional circumstances that necessitate the use of compressed air to a pressure greater than 50 kPa, additional protective risk control measures should be implemented. These measures must be inspected and certified by a competent person such as a qualified engineer.

Protective measures may include using a designated test zone, establishing an exclusion zone, appropriate procedures, equipment, materials and pipe end supports.

Ensure end-caps are installed to the manufacturer's specifications, including tightening fasteners to the specified torque which will require appropriate tools (eg calibrated torque wrench and correct size sockets).

Further information

Australian Standards

- AS 2419.1 - Fire hydrant installations
- AS 2118.9 - Automatic fire sprinkler systems

Contact Details

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For more information on occupational health and safety, go to WorkSafe's website: **worksafe.vic.gov.au**