Government of Western Australia
Department of Commerce
WorkSafe

Safety alert 02/2014

Flashback arrestors

The purpose of this safety alert is to highlight the importance of the safety requirements relating to the design, manufacture, importation and supply of flashback arrestors for use on gas cylinders and blowpipes at a workplace where welding and allied processes are carried out.

Background

A plumber was in the process of heating up some copper piping to ready it for brazing. They had run the hoses from the oxy-acetylene cylinders, which were stored in an aluminium frame in the rear of the worker's utility to his work area, which was approximately 30 metres away. A short time after the worker ignited the gas at the blowpipe end, he heard an explosion outside. He went outside and saw his work vehicle engulfed in flames. No-one was injured in this incident, but there was significant potential for serious injury or death.

Flashback arrestors were fitted to both the operator's side of the cylinders and to the blowpipe.

Non-compliant flashback arrestors identifiable only by attached stickers.

Contributing factors

- The investigation revealed the possible cause of the explosion was related to the fitting of non-tested flashback arrestors. Subsequent testing on similar flashback arrestors revealed that they had failed a flow test and reverse flow test.
- The gas cylinders in the rear of the vehicle may have been set up in such a way that when the ignited gas vented from the acetylene cylinder, it melted a hole into the oxygen cylinder, causing an explosion.

Action required

1. A person who designs, manufactures, imports or supplies plant (flashback arrestors) for use at a workplace shall, so far as practicable, ensure that they have undergone the relevant testing and examination so persons are not exposed to a hazard.
2. Gas cylinders intended to be used at a workplace where welding and allied processes are done need to be stored and maintained appropriately. Where oxygen and acetylene cylinders are used adjacent to each other, consideration should be given to protecting the oxygen cylinder by placing a non-flammable shield between the cylinders.

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3. Flashback arrestors should comply with AS 4603.
4. Each flashback arrestor should be marked with the following information:
    a. The number of the relevant standard, i.e. AS 4603.
    b. The name or trademark of the manufacturer and/or distributor.
    c. The model or code number relating to the manufacturer's installation instructions.
    d. The direction of the gas flow, normally an arrow.
    e. Name of gas.
    f. The maximum working pressure expressed in bars or kPa.
    g. The date of manufacture and batch number, by coding, if necessary.
    h. Safety devices should be colour coded as follows – Blue for oxygen and red for fuel gas service. NOTE: Markings should comply with BS EN 730.
    i. The country of manufacture.

Further information

- WTIA Technical Note No. 7 – Health and Safety in Welding.
- AS 4603 – Flashback arrestors – Safety devices for use with fuel gases and oxygen or compressed air.
- BS EN 730 – Gas welding equipment – Safety devices – Part 1: Devices incorporating a flame (flashback) arrestor.
- Commission for Occupational Safety and Health Guidance note – Gas welding safety flash back arresters

Further information can be obtained from WorkSafe's internet site www.worksafe.wa.gov.au or by contacting customer service on 1300 307 877 or email safety@commerce.wa.gov.au

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