

# Safety alert

Mines Inspectorate

Safety alert no. 253  
18 January 2011

## Electric shocks from welding equipment

**Mine Type:** All Mine Types

**Incident:** In the calendar year 2010, 20 electric shocks involving welding equipment were reported to the Mines Inspectorate, compared to 13 in 2009.

**Equipment:** Electric arc welding machines and associated equipment

**Hazard:** Wet work environments, inadequately maintained equipment, inoperative protection devices and poor operating standards all add to risk of electric shock or electrocution. Note that the last recorded fatality due to electrical shock in Queensland mines occurred in December 1997 and involved welding equipment.

**Cause:** A review of these incidents reveals common causal factors, including:

- changing electrodes with gloves on, but in poor / wet conditions, and with the welder energised
- welding equipment in poor condition, e.g. Hazard Reducing Devices (HRDs, which include Voltage Reducing Devices) not functioning, or supply electrical earth broken or ineffective
- working in wet conditions.
- poor operational standards, e.g. assistants holding steel to be welded and becoming part of the circuit, or with poorly situated earth clamps
- ineffective control measures for the welding environment classification
- failure to follow site safety procedures.

**Comments:** A review of incident investigation reports has highlighted these concerns:

- failure to include electrical expertise as part of the investigation process
- failure to review requirements of Australian Standards against site procedures and practices
- failure to identify the electrical hazards and risks during work prestart safety observations.

### Recommendations:

- Review site procedures and practices to ensure that the safety requirements of Australian Standards AS 1674.2-2007 and the AS 60974 series are being addressed.
- Include welding equipment as well as functional testing of HRDs in maintenance strategies.
- Ensure welding work environments are appropriately classified and that adequate control measures are implemented.
- Consider using 'fail safe' HRDs.
- Ensure compliance with relevant site safety procedures and standards.

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