

# SAFETY ALERT



## ELECTRIC SHOCK FROM WELDING EQUIPMENT

### INCIDENT

A welder's assistant received an electric shock when replacing the welding rod in the hand piece of a portable electric welding machine.

### CIRCUMSTANCES

The incident took place in very humid conditions, in a confined space at a mine site. The assistant received the shock from a damaged hand piece.

### RECOMMENDATION(S)

- 1 The Queensland Coroner has recommended that the use of Voltage Reduction Devices in conjunction with good welding equipment and practices to AS 1674 – 'Safety in welding and allied processes', be compulsory.
- 2 The Coal Mines (General) Regulations 1999, Clause 33, stipulate that the maximum voltage never exceeds Extra Low Volts (from AS 3000 – Electrical installations [known as the Wiring Rules]) with adequate precautions determined by risk.
- 3 Mine sites should review their site standards for welding in conjunction with available devices and best safe welding practices. MDG 25 – 'Guidelines for Safe Cutting and Welding' provides a list of relevant references which may assist with the review.

### NOTES

The following electrical shock fatality and incidents from welding supplies or less than 240V AC were noted:

- 1 Queensland mine fatality December, 1997. Approximately 150 reportable incidents during 1999.
- 2 In New South Wales mines large numbers of shock incidents were reported above extra low voltage.
- 3 Workcover has reported various incidents.

The draft *Guidelines for Safe Mining* includes an electrical safety section. In part it reads:

"The severity of shock received when a person becomes a part of an electric circuit is affected by three primary factors: the amount of current flowing through the body (measured in milli-amps), the path of the current through the body and the length of time the body is in the circuit. Other factors that may affect the severity of shock are the frequency of the current, the phase of the heart cycle when shock occurs and the general health of the person."

Automatic voltage reduction devices are now readily available to reduce tip voltage to 12V when welding is not in progress.

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