

# Safety alert

Mines Inspectorate

Safety alert no. 242 (Version 1)  
25 June 2010

## Electrical Shocks from Laboratory Ovens / Furnaces.

**Mine Type:** All Mine Types

**Incident:** A laboratory worker received an electric shock when he made contact with the interior lining of a rapid ash oven with metallic tongs

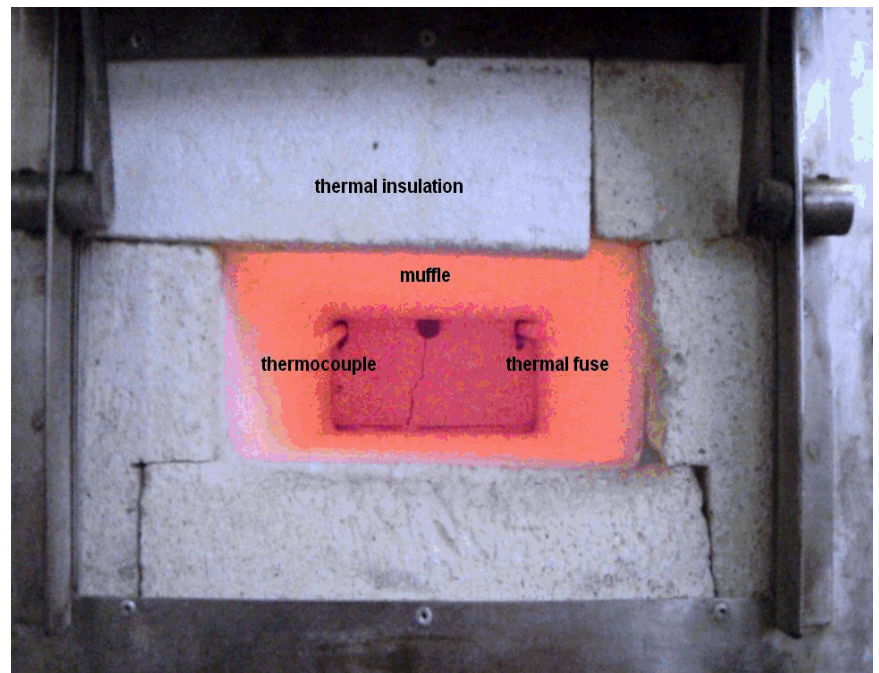
**Equipment:** Laboratory ovens / furnaces

**Hazard:** Electrical shock hazard from energised internal parts

**Cause:**

A subsequent investigation indicated that the source of this voltage was the thermal fuse, which is used to protect the oven from an over temperature event. Further testing found approximately 144 volts AC to earth on the muffle, (surrounding the thermal fuse and thermocouple), with the oven door open and heating elements de-energised.

The internal walls of the oven became conductive as they approached the operating temperature of 830 deg C. The thermal fuse power was not interrupted when the furnace door was opened, so the rear wall becomes 'live'. As temperature rises in the oven, the internal components become more conductive, and as some components do not have power isolated when the door to the oven is opened, this can present an electrical shock hazard.



### Comments:

- The *Coal Mining Safety and Health Regulation 2001*, **Section 23 Design, installation and maintenance**, requires that:  
The site senior executive must ensure the design, installation and maintenance of electrical equipment and installations at the mine provide for the following—  
.....  
(e) preventing a person inadvertently contacting live parts of equipment or an installation exceeding extra low voltage.  
*Example for paragraph (e)*— The design, installation and maintenance may provide for insulation or an enclosure, shield, interlocking device or automatic disconnection device for the equipment or installation.
- The *Mining and Quarrying Safety and Health Regulation 2001* contains similar provisions.
- In the last 3 years, 5 electric shocks from laboratory ovens have been reported from Central Queensland coal mines.

### Recommendations:

- Have competent persons check laboratory ovens for hazards such as the accessible live components as mentioned above.
- Ensure such equipment conforms to the legislative requirements for preventing a person inadvertently contacting live parts of equipment or an installation exceeding extra low voltage. This could include, for example, using double pole door interlock switches, switching active and neutral conductors, to remove all voltage sources.

**Chris Skelding**

**Regional Inspector of Mines - Central**

Contact: James Catt, Inspector of Mines, +61 7 4938 6546

**Please ensure all relevant people in your organisation receive a copy of this Safety alert. Any such advice supplied to site should reach those who require it, and it should also be placed on the mine notice boards.**

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