Safety Bulletin

Date: June 2025

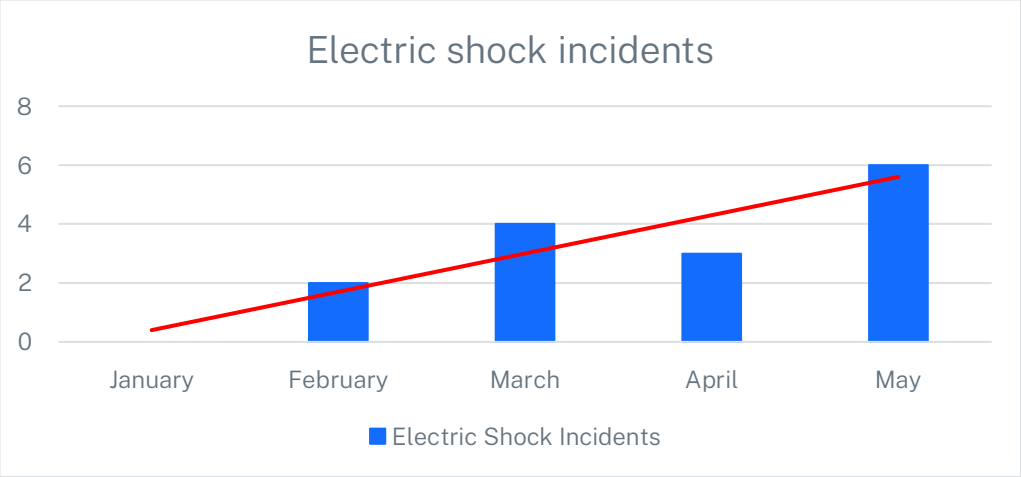
Electric shocks in the mining industry

This safety bulletin provides safety advice for the NSW mining industry.

Issue

Since January, there were 15 electric shock incidents notified to the Resources Regulator in a five-month period. This is a substantial increase on the previous 12 months, and the trend has also seen an increase in apprentices suffering electric shocks.

Figure 1: Graph showing the increase in electric shocks in the mining industry this year



Circumstances

4 February 2025: A worker suffered an electric shock while hosing in a reclaim tunnel.

27 February 2025: A boilermaker suffered an electric shock while welding in wet conditions.

6 March 2025: An apprentice electrician suffered an electric shock after contacting the live side of a main isolator while undertaking electrical maintenance.

19 March 2025: An underground worker suffered an electric shock when he was removing a battery from an air stream helmet battery charging station.

21 March 2025: An apprentice electrician suffered an electric shock while changing a light fitting. The light fitting was isolated, but there were multiple supplies to the same light fitting at the time of the incident.

29 March 2025: A boilermaker suffered an electric shock while using a magnet drill in a workshop.

11 April 2025: An apprentice boilermaker suffered an electric shock while operating a MIG welder on a screen at a processing plant.

14 April 2025: An electrician suffered an electric shock after coming into contact with an exposed 240 Volt circuit.

26 April 2025: An electrician suffered an electric shock while charging IS UPS batteries.

1 May 2025: A boilermaker suffered an electric shock while welding in wet conditions in a shaft.

14 May 2025:

- An electrician suffered an electric shock when his finger made contact with the supply plug of a welder while he was fault finding.
- A boilermaker suffered an electric shock while undertaking welding repairs on screen using a caddy welder.

19 May 2025:

- A worker pressed the button on an ice machine and suffered an electric shock.
- An electrician was conducting maintenance on the surface ventilation fan that involved insulation testing of the motor. The next day the electrician returned to the motor and brushed up against the motor terminals and suffered an electric shock.

21 May 2025: A cleaner suffered an electric shock while cleaning a mine bathhouse. At the time, the worker was using a vacuum cleaner.

Figure 2: Graph showing the worker groups who experienced electric shocks this year

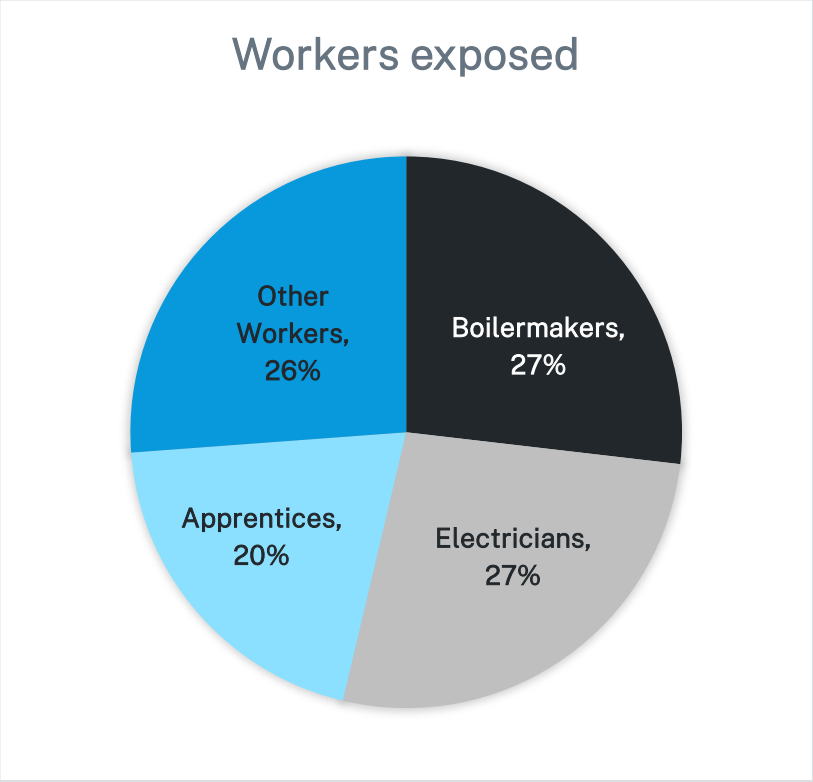
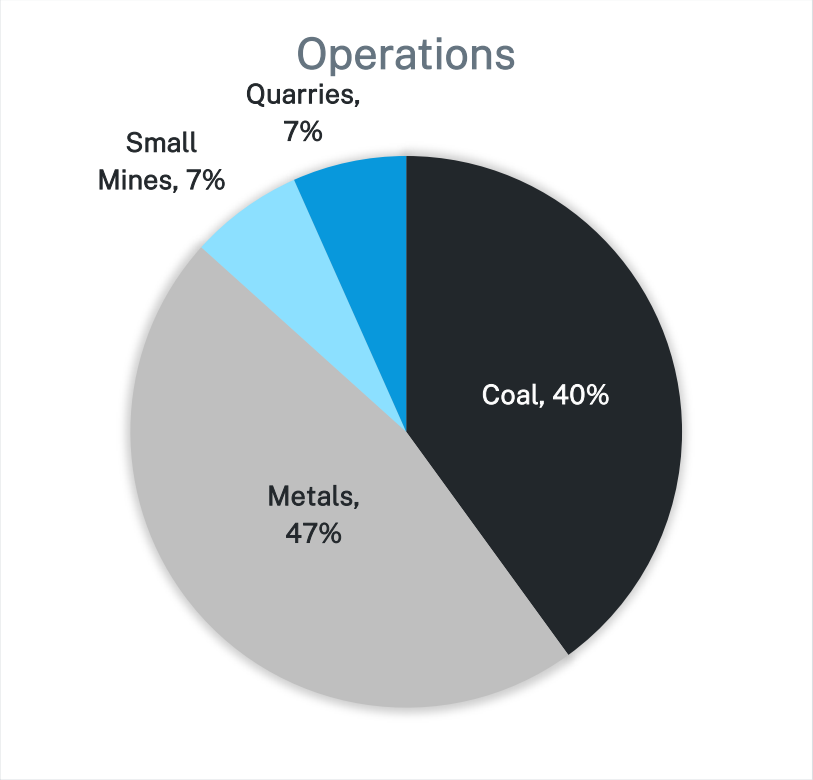


Figure 3: Graph showing the mining sectors that were affected by electric shocks this year

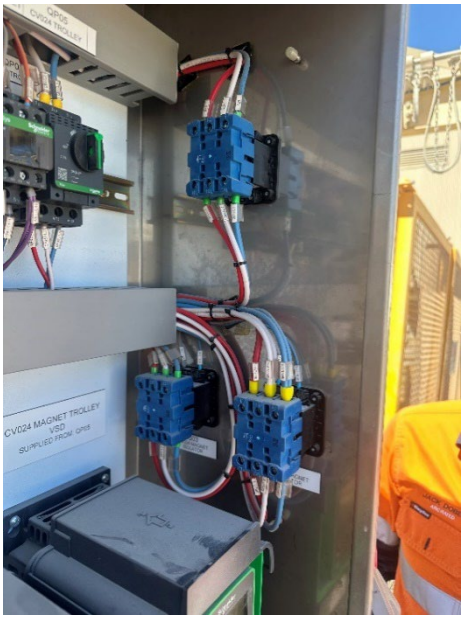


Incident 1 – 6 March 2025 Underground metals mine

An electrician and an apprentice electrician were performing electrical maintenance when the apprentice suffered an electric shock. The task included tightening the terminals on a magnet starter with 2 panels side-by-side. The apprentice was in one panel and the electrician was in the other, tightening terminals. The apprentice made contact with the live side of the main isolator with a 1000 volt insulated screwdriver.

The isolations applied to the panel were incorrect (personal locks and tags applied to outgoing isolators, not the main isolator of the board).

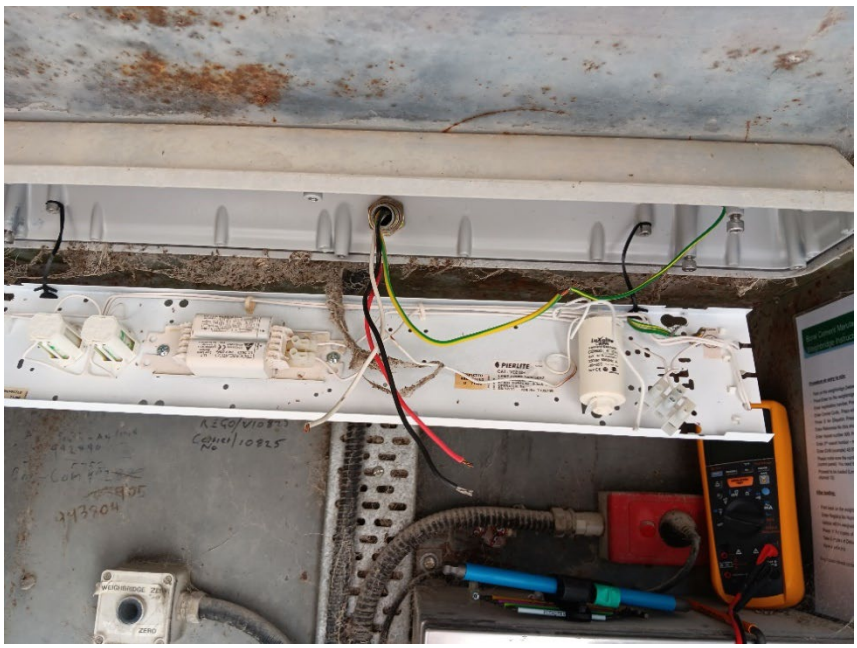
Figure 3: Magnet starter cubicle



Incident 2 – 21 March 2025 Industrial minerals

A fourth-year electrical apprentice suffered an electric shock whilst changing a fluorescent light. The light circuit was isolated and tested under supervision before the work began. The apprentice was exposed to a live circuit within the casing when changing the light. There were 2 power sources to the light fitting from 2 separate circuit breakers. Drawings for the electrical installation were not up to date.

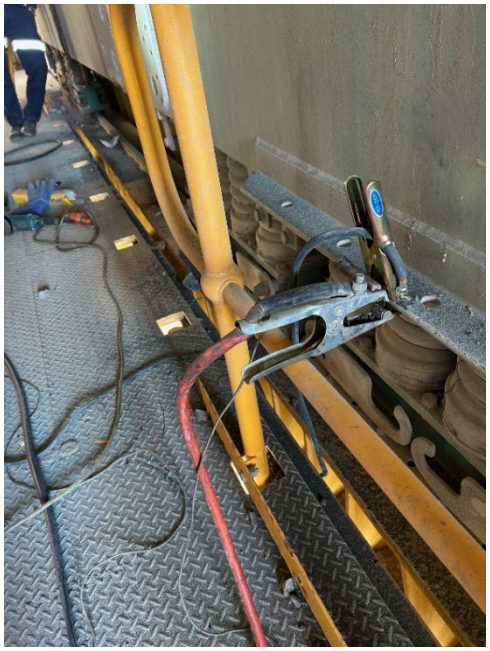
Figure 4 & 5: Lighting switchboard and fluorescent light



Incident 3 – 11 April 2025 Underground metals mine

A boilermaker suffered an electric shock while operating a metal inert gas (MIG) welder at the screen building. The boilermaker was leaning against the screen while welding, creating an earth path from his elbow to the screen.

Figures 6 & 7: Earth clamp location on screen, and reenactment of boilermaker position while welding



Incident 4 – 1 May 2025 Underground coal mine

A boilermaker suffered an electric shock while welding in wet conditions in a ventilation shaft. The welding machine was fit-for-purpose for the task being undertaken. On inspection after the incident, the welding handpiece had clear evidence of damage allowing water ingress and transfer of the welding voltage to the boilermaker. The boilermaker suffered multiple electric shocks before ceasing work.

Figures 8 & 9: Damage to welding handpiece, and battery portable welder

Legislative obligations

Work Health and Safety (Mines and Petroleum Sites) Regulation section 30(5) requires the operator of a mine to take into account all matters identified in of Schedule 2, section 3 – Electrical engineering control plans, including:
(3)(2) An electrical engineering control plan must set out the control measures for the following risks to health and safety associated with electricity at the mine or petroleum site taking into account the matters set out in subsection (3) —

(a) injury to persons caused by direct or indirect contact with electricity,

(b) injury to persons caused by working on electrical plant or electrical installations.

Recommendations

Mine operators and other persons conducting a business or undertaking (PCBUs) should assess their electrical engineering control plans to confirm the existing safeguards against electric shock are suitable for the specific tasks being carried out. This assessment should include an evaluation of how well these risk controls are being applied. Guidance on these matters can be found in the Code of practice: Electrical engineering control plan.

Key focus areas for the review should include:

- **Energy isolation protocols:** ensuring they incorporate effective verification measures for potential energy sources and backfeeds, which may come from:
  - standby or emergency generators
  - uninterruptible power supplies (UPS)
  - renewable energy systems.
- Selection of suitable equipment, which may involve:
  - using extra-low voltage devices for field applications
  - preferring battery-operated or pneumatic tools over mains-powered alternatives, especially in wet or humid conditions
  - ensuring welding units are equipped with appropriate hazard reduction features and have a safe open circuit voltage for the intended environment.
- **Ongoing equipment maintenance:** to confirm built-in safety features remain effective. For example:
  - maintaining correct ingress protection (IP) ratings to prevent exposure to dust and moisture.
- Workforce competence and supervision, making sure:
  - supervision levels match worker experience, with closer oversight for apprentices and trainees
  - supervisors are adequately qualified, especially when supervising electrical work outside their own discipline.

- **Procurement and equipment introduction processes:** to guarantee that only machinery and tools meeting the site's electrical safety standards are approved for use.
- **Management of the broader work environment:** ensuring that activities in one area do not introduce new risks to others working nearby.

Note: Please ensure all relevant people in your organisation receive a copy of this safety bulletin and are informed of its content and recommendations. This safety bulletin should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's common area, such as your notice board where appropriate.

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