

Preventing electric shocks to electricians

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This document provides information for electrical contractors, employers and electricians on how to eliminate or reduce the risk of electric shock when undertaking electrical installation or repair work on smaller electrical installations, such as for houses, shops and small commercial premises.

Legal Requirements

Employers must eliminate any risk to health and safety, so far as is reasonably practicable. If it is not reasonably practicable to eliminate all or part of the risk it must be reduced so far as is reasonably practicable. The above requirements also apply to a self-employed person if there is a risk to another person from the conduct of their undertaking.

Where electrical work is also construction work employers and self-employed persons have additional duties, including;

- preparing and following safe work method statements (SWMS), to control the risk of electric shock,
- construction induction training, and
- site specific inductions.

Employees must take reasonable care of their own health and safety, and the health and safety of persons who may be affected by their acts or omissions at the work place. Employees must cooperate with their employer and carry out the employer's actions to comply with their OHS duties.

Electricity safety law, which is regulated by Energy Safe Victoria (ESV), requires all electrical circuits or electrical equipment handled in the course of electrical work to be disconnected from the electricity supply, unless adequate precautions are taken to prevent electric shock or other injury.

Controlling electric shock risk

1. De-energise the installation, or part of the installation.

In many situations it is possible for electricians to eliminate the risk of electric shock by de-energising the installation. This can be done by removing the electricity service fuse. Removal and replacement of the service fuse should be undertaken in accordance with ESV guidelines.

If it is not reasonably practicable to eliminate the risk by removing the service fuse, the risk can be reduced by de-energising part of the installation by turning off and locking out the main switch(es), or circuit isolation devices.

The introduction of a broad range of battery power tools, such as drills, impact drives, various types of saws, and battery powered LED lights, it is no longer necessary to have mains electricity available for lighting or tools.

While it may be necessary to have electricity on to fault find complex electrical plant, it is generally not required for tracing and locating faults in basic electrical installation wiring. For example, the insulation resistance, earthing continuity, polarity and circuit connection tests that the electrician is required by electrical safety law to perform before first energising an electrical installation are also suitable for circuit fault finding.

2. Use appropriate signage.

Once the service fuse is removed, the main switches or isolation devices are locked off a sign should be placed at the main switchboard or device location that:

- warns against turning on the power, such as:
 - "Danger working on the electrical installation" or
 - "Electricians working do not turn on power", and
- is legible (printed or handwritten), with lettering large enough to be easily read.

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3. Verify the installation is de-energised.

The electrical installation should be treated as energised until verified by test that de-energisation has been achieved. Whenever the de-energised installation is left unattended it should be re-tested to ensure it is still de-energised before recommencing work.

The electrical switchboard or part of the switchboard which contains the main or isolating switch that is locked and tagged out, should be considered energised and any work on the switchboard itself should be treated as working live.

Guidance on appropriate safety measures and protective equipment when working live can be found in AS/NZS 4836 – *Safe work on low-voltage electrical installations*.

4. Use safe systems of work.

To support the risk controls outlined above there must be safety systems of work developed and followed to reduce the risk to the persons undertaking the:

- removal and replacement of the service fuse,
- lock and tag out the main switches, and
- verification of de-energisation process (testing for live).

Safe Work Method Statements

Electrical installation work is - construction work unless it only involves routine or minor testing, maintenance or repair work.

Any construction work on or near an energised electrical installation is High Risk Construction Work (HRCW) and a SWMS must be prepared before the work starts, and followed while the work is undertaken.

The SWMS must describe:

- what controls will be implemented to control the various risks, including the risk of electric shock,
- how the controls will be implemented and
- how the controls will be maintained during the works.

The SWMS should include the process that will be used to verify de-energisation prior to working on the electrical installation.

Other types of HRCW may be relevant to electrical work and would also need to be addressed in the SWMS. For further information on HRCW and SWMS, go to worksafe.vic.gov.au.

Other Risks

While not addressed in this guidance, undertaking electrical work may have other hazards which must also be controlled, so far as is reasonably practical, such as:

- falls from height
- excessive heat
- dust, and
- biological hazards (vermin, insects, moulds).

Further information

Contact the WorkSafe Victoria Advisory Service on **1800 136 089** or go to worksafe.vic.gov.au.

- Working Safely in General construction
- Working Safely in Housing construction
- Information sheet – Safe work method statements.

Legislation

- *Occupational Health and Safety Act 2004*
- *Occupational Health and Safety Regulations 2007*

Australian Standards

- AS/NZS 4836 – *Safe work on low-voltage electrical installations*

For information on electricity safety law, contact Energy Safe Victoria or go to esv.vic.gov.au.

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