

Working On and Near Live Electrical Parts



Electrical Safety Office - 2009

Electrical Safety Forum

- The Electrical Safety Office and Queensland's electrical safety laws
- Two case studies
 - What went wrong ? - an electrical incident
 - Getting it right !

Electrical Safety Office

Goals:

- electrically safe, homes, workplaces and other environments

We work with:

- workers and employers and the community
- unions and employer representatives
- federal and state jurisdictions

Legislation

Electrical Safety Act 2002

- Imposes obligations on persons

Electrical Safety Regulation 2002

- Wiring rules, live work and working around electrical parts
- Apprentice supervision

Codes of Practice

- Working Near Exposed Live Parts
- Electrical Work
- Works
- Electrical Equipment - Rural Industry

Obligations of employer about supervising training person (ESR s. 209)

- Restrictions on work if 6 months of training not completed
- Training person performing electrical work must be supervised at all times
- Level of supervision must be appropriate for
 - Type of work
 - Adequacy of trainee's training
 - Competency of trainee



Live work must not be performed unless: (ESR s.11 and 12)

...It is not practicable to perform the electrical work other than by live work, because;

- a) it is necessary in the interests of safety
- c) electricity supply is needed to perform the electrical work or
- e) there is no reasonable alternative to performing the electrical work by live work.

If there is no reasonable alternative (ESR s.12)
then all (nine) requirements must be met

1. Risk assessment
2. Safe system of work (AS/NZS 4836)
3. Authorisation
4. Appropriate training
5. Test equipment is appropriate
6. Clothing and PPE are appropriate
7. Isolation point clear and unobstructed
8. Area is clear of obstructions
9. Safety observer

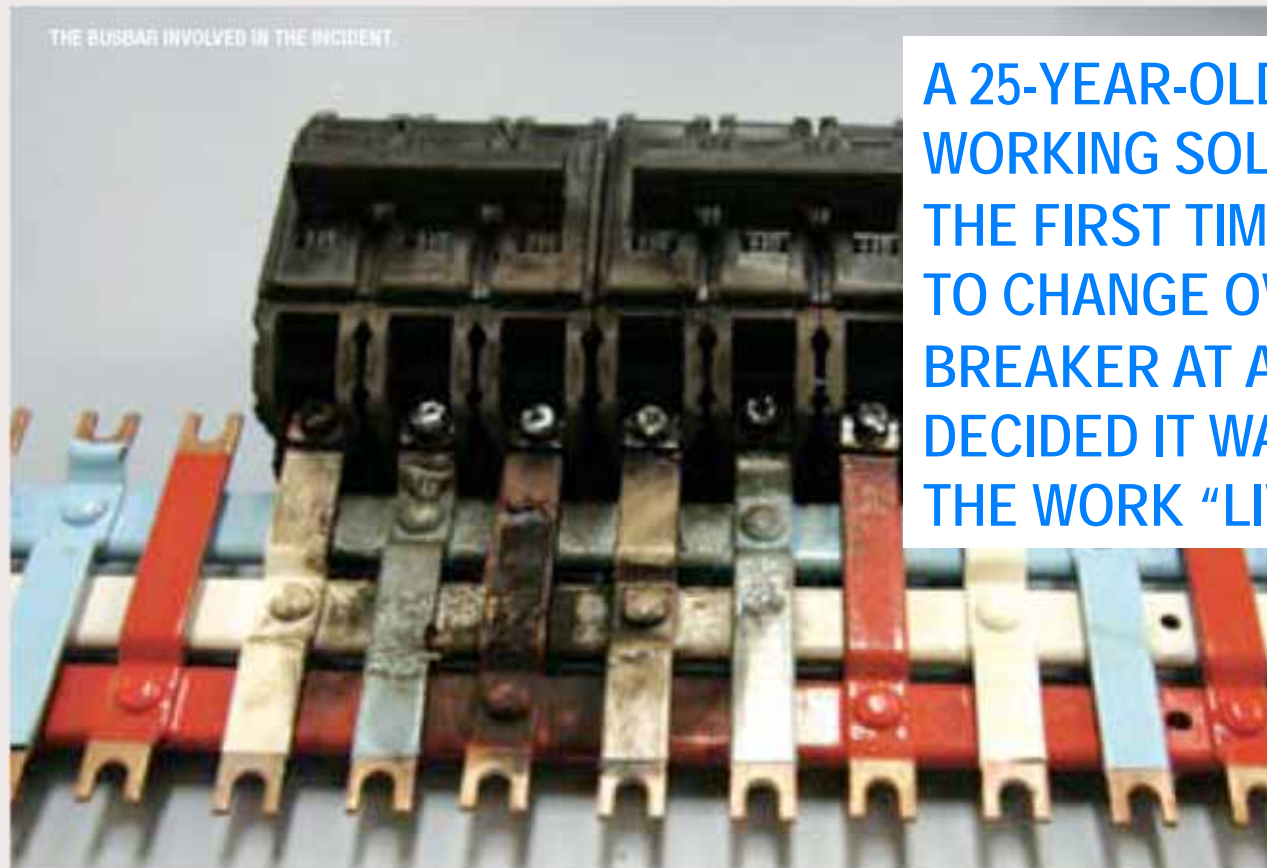


Case Study 1

working with and near electrical parts

What went wrong for this young electrician who is lucky to be alive?

Young electrician is lucky to be alive



A 25-YEAR-OLD ELECTRICIAN WORKING SOLO FOR JUST ABOUT THE FIRST TIME, AND JUST ABOUT TO CHANGE OVER A CIRCUIT BREAKER AT A BUSY RESTAURANT DECIDED IT WAS SAFE TO PERFORM THE WORK "LIVE".

Source: www.energysafe.vic.gov.au

Contributing factors

- Experience
 - “working solo for about the first time”
- Under pressure
 - Kitchen needed equipment connected
- A safe system of work ?
- Risk management ?
- Safety measures ?

How this might be dealt with by Electrical safety law

- Investigation
 - What is the process?
 - The inconvenience
- Legal action
 - Prosecution
 - The possible legal outcomes

The human cost

- Work Safe - Home Safe
 - Social cost of time off work
 - Time away from family
 - Loss of income
 - Physical and psychological Injuries



Recent Electrical Work Fatalities

- Nov 07 – electrical worker died while performing tests at a building site to determine the cause of a reported electric shock contacted a live roof.
- Jan 08 – unlicensed electrical worker receives a fatal electric shock when working on a lighting circuit in a shop.
- November 08 – Electrical worker received fatal electric shock while working around a live switchboard.
- 4 other electrical fatalities of non-electrical workers.

Case Study 2

working with and near electrical parts

- Getting it right to go home safe
 - Upgrading the damaged switchboard
 - Busy operational restaurant kitchen
 - The job is to be done by
 - Electrical worker
 - An apprentice
 - Supervised by their employer



This case is designed to illustrate the process of safe electrical work. You should not rely on the fictitious details of the case for your risk assessment or safe system of work.

The Safe System of Work

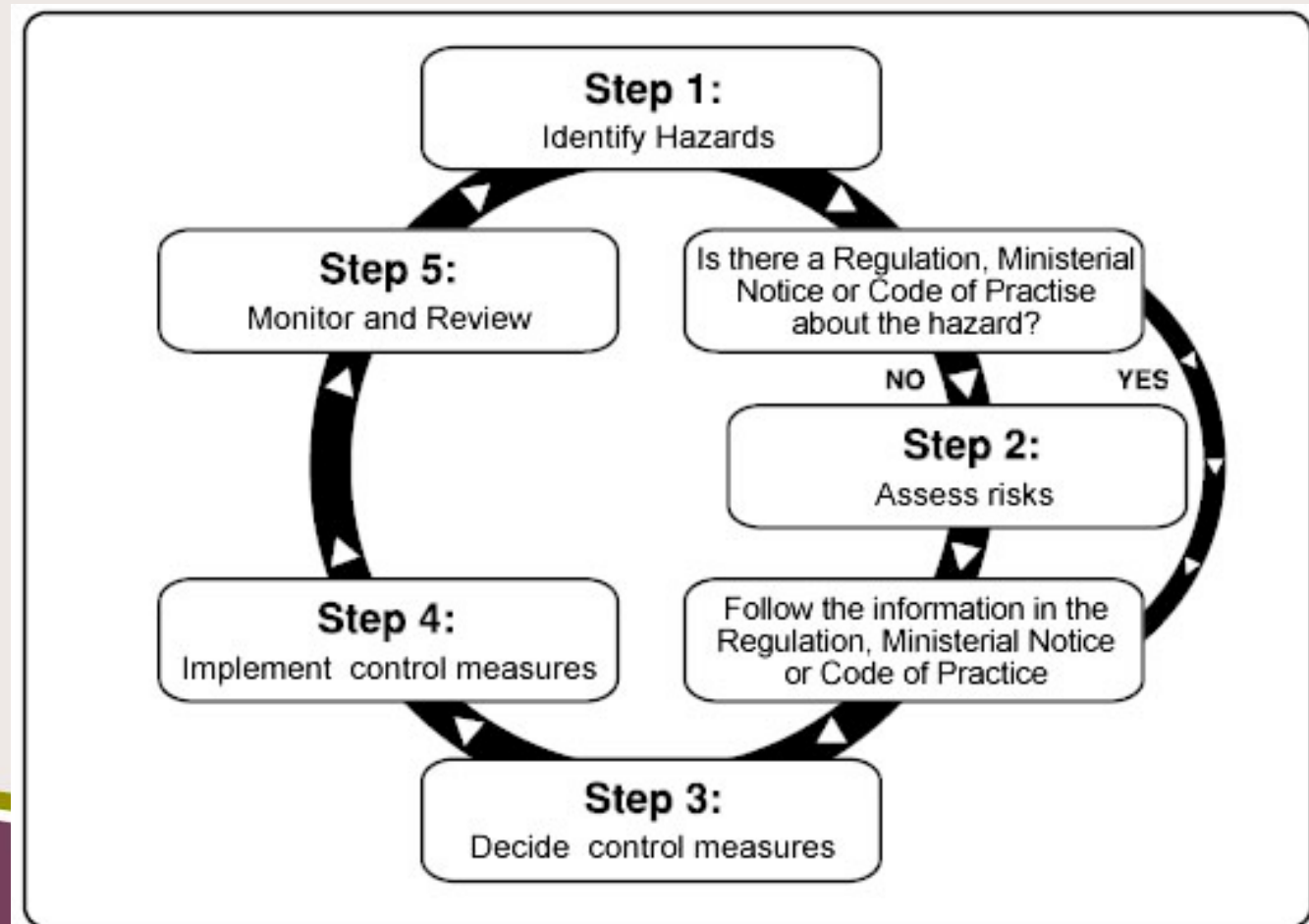
ES Reg 12(2) & AZ/NZS 4836

1. Risk management process
2. Safety equipment and tools
3. Safety observers
4. Test equipment
5. Training, qualifications and competence
6. Personal protective equipment
7. Electrical incidents



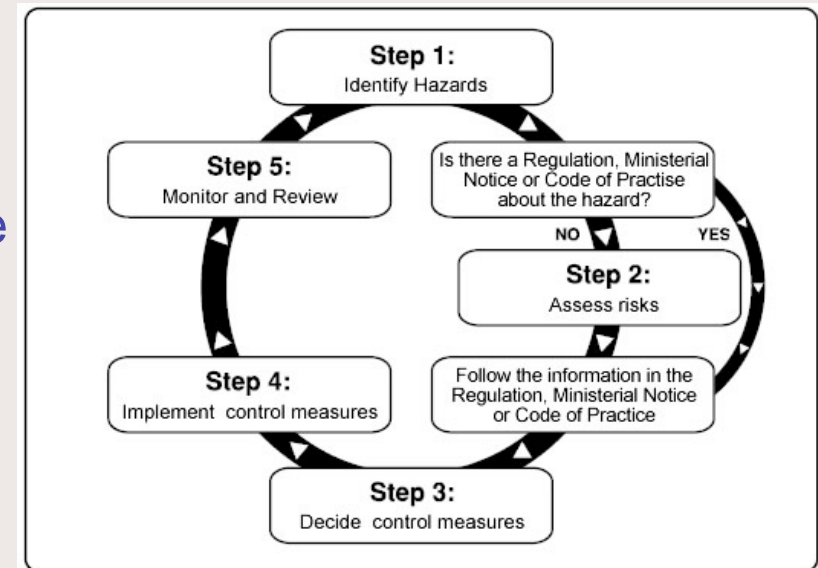
Risk Management for Electrical Work

CoP for Electrical work and WHSQ Risk management Cop 2007



Risk Management for Electrical Work

- Step 1 Identify hazards
- Step 2 Assess the risks
 - Regulation, Code of Practice
- Step 3 Decide control measures
- Step 4 Implement controls
- Step 5 Monitor and review



Step 1 - Identify Hazards

Form A1: Hazard identification and register

Workplace area or grouping: <i>Kitchen switchboard changeover</i>		Ref. no: _____	
Form completed by: _____ (print)		(sign)	
Date form completed: / /			
Ref. no.	Identified hazards	Date	Initials
1	<i>Live mains and circuits in and around the board (Poor markings) during decommissioning</i>	When	Who
2	<i>Access to the board is obstructed by equipment storage</i>	“	“
3	<i>Testing, commissioning and fault finding</i>	“	“
4			
5			
6			

Step 2 Assess the risks

Form A2: Risk Assessment and control

Fill in one form for each hazard identified at the workplace.

Workplace area or grouping: <i>Kitchen switchboard decommissioning</i>		Ref. no: <u>1</u>	
Form completed by: _____		(print name) _____ (sign)	
Date form completed: / /			
Hazard identification			
Hazard: <i>Live mains and circuits in and around the board</i>			
Associated risk: <i>Working near live parts !! Poor circuit markings - potentially 2 supplies</i>			
Specific circumstances relating to the risk:			
Persons at risk: <i>Tradesperson & Apprentice, kitchen workers</i>			
Risk assessment			
Existing control measures (if any):			
Likelihood: (tick)	Almost certain	<input checked="" type="checkbox"/> Likely	<input type="checkbox"/> Possible
Consequences: (tick)	Catastrophic	<input checked="" type="checkbox"/> Major	<input type="checkbox"/> Moderate
		<input type="checkbox"/> Unlikely	<input type="checkbox"/> Rare
		<input type="checkbox"/> Minor	<input type="checkbox"/> Insignificant
Risk control			

Step 3 Decide Control Measures

Form A2 Continued

Risk control

Possible control options:

Elimination: *Not possible – the restaurant requires electricity.*

Substitution : *Not possible.*

Isolation: *Identify circuits (possible live work) in afternoon slow period and do changeover after hours.*

Engineering: *Replacement switchboard has insulated /isolating connections.*

Administrative & Personal Protective Equipment:

- *Experienced electrical worker to do disconnection, isolation, testing, commissioning etc.*
- *PPE worn and isolation procedures to be followed.*
- *Apprentice is instructed on hazards identified and controls in place, including in an emergency situation.*

Preferred control options (and why): *Work after hours when the kitchen can be isolated. Initial circuit identification and final commissioning may need to be done live with mandatory controls.*

Step 4 Implement the controls

Form A2 Continued

Implementation plan						
Control option	Associated activities	Resources required	Person (s) responsible	Proposed implementation date	Sign off and date	Scheduled review date
<i>Decommissioning - Live work procedures for circuit identification and isolation</i>	<i>Minimised live work to testing, fault finding etc</i>	<i>After hours work will incur penalty rates,</i>	<i>Supervisor & tradesperson consulting and notifying manager and kitchen workers</i>	<i>ASAP</i>	<i>Prior to start Supervisor, tradesman, restaurant manager</i>	<i>Prior to next isolation task</i>
<i>De -energised electrical work</i>	<i>Isolation procedures</i>	<i>PPE & lockout tags</i>	<i>As above Apprentice instructed</i>	<i>ASAP</i>	<i>Prior to starting work</i>	<i>Prior to restarting work</i>
<i>Live work procedures for testing and commissioning</i>		<i>PPE & test gear</i>	<i>Supervisor, tradesperson</i>	<i>End of job</i>	<i>Prior to starting work</i>	<i>Prior to next testing job</i>

Step 5 Monitor and review

Form A2 Continued

Review __/__/__

Are control measures in place?

- **Yes** *Live work , de-energised work and isolation procedures used and documented.*
- No, comment (why not):

Are controls preventing or minimising the risk?

- **Yes** *Risk minimised but not prevented.*
- No, comment (why not):

Are there any new problems with the risk?

- No
- **Yes**, comment (what are they): *Working after hours may cause fatigue and lapses in concentration.*

The Safe System of Work

ES Reg 12(2) & AZ/NZS 4836

1. Risk management process ✓
2. Safety equipment and tools
3. Safety observers
4. Test equipment
5. Training, qualifications and competence
6. Personal protective equipment
7. Electrical incidents



Safety Equipment and Tools

- For this job
 - Ladders
 - Hand tools
 - Barriers
- Are they appropriate ?
- Are they maintained ?
- **Document what you do**



Safety Observers

- Decided by
 - Live work – legislation
 - Other work – risk assessment
- Responsibility
 - Observe to ensure procedures are maintained
 - Warn
 - Emergency assistance
- Competent for role
- Suitable PPE
- **Document what you do**

Test Equipment

- Suitability
- Maintained
- Document what you do



Training, Qualifications and Competence

- **For this job**
 - Are the skills of the workers adequate ?
 - Who will be doing what elements of the work ?
 - Who is supervising ?
 - Are they competent to do the work safely ?
- Document what you do



Personal Protective Equipment

- Appropriate selection
- Fit correctly
- Good condition
- Document what you do



Electrical incidents

- Medical Attention
 - Any person receiving an electric shock should receive medical attention.
- Reporting
 - Electrical incidents must be reported.

The Safe System of Work

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1. Risk management process ✓
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Summary

Today we talked about;

- Electrical safety laws
- Having a Safe System of Work
- Risk management
- Apprentice supervision

Discussion

Please tell us what you think on the evaluation form

Further Information:

The Electrical Safety Office online: www.electricalsafety.qld.gov.au

Electrical Safety Infoline: **1300 650 662**

Workplace Health and Safety Infoline: **1300 369 915**