



**CS ENERGY PROCEDURE FOR**  
**ELECTRIC SHOCK TREATMENT AND REPORTING**  
**CS-OHS-05**

Responsible Officer: Group Manager Health and Safety  
Responsible Executive: Executive General Manager Corporate

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**DOCUMENT HISTORY**

Date	Rev	Key Changes	Author	Approver
8/11/02	1	Draft Issue		
10/04/2012	2	Updated electrical shock and medical treatment provisions & New CS Energy formatting	DClarke	ABrown

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## 1 PURPOSE

To establish the reporting and treatment processes to be followed in the event of a person receiving an electric shock.

An electric shock is a unique injury that requires specific measures to ensure the initial and ongoing safety of the person who has received the injury. Numerous documented instances in industry have demonstrated the importance of medical treatment/clearance following the event. On several occasions, complications have occurred to individuals within and up to 48 hours after the time of an electric shock event (including death). Electric current of any kind has the potential to affect the function of critical internal organs and can be life threatening.

## 2 SCOPE

This procedure covers the process to be followed after a person has received an electric shock. This procedure applies to all CS Energy sites and subsidiaries.

## 3 RESPONSIBILITIES

### 3.1 Site Manager

- Ensure notification and reporting occurs as specified
- Ensure application and adherence to this procedure

### 3.2 Health and Safety Team

- Notify management of incident as soon as possible
- Liaise with Response/Rescue team to ensure injured person receives the appropriate treatment
- Notify external bodies of the incident as required
- Manage/coordinate incident investigation as required

### 3.3 Rescue/Response Team

- Ensure area is made safe if required
- Transport injured person to first aid
- Liaise with and assist ambulance in transporting the injured person

### 3.4 Supervisors, Employees and Contractors

- Accompany injured person to medical provider
- Ensure application and adherence to this procedure

## 4 ACTIONS

### 4.1 Electric Shock Incident

The following steps are required following an incident that has produced an electric shock:

- If rescuing a person who is still connected to the supply voltage, Low voltage rescue (LVR) practices must be followed to ensure the safety of the victim and the rescuer so they do not come into contact with the electrical hazard.
- Following the rescue, ensure the area is safe (i.e. isolate and/or barricade around the hazard) and **do not** interfere with the scene of the incident where possible (e.g. cleaning, removing items or returning area to normal condition).
- The worker involved is to be transported to the first aid centre/facility through normal measures (e.g. ERT or other); and
- Report the incident immediately to Supervisor or Health and Safety Team on site.

### 4.2 Location/Scene of the Incident

When an incident occurs, the highest priority action is to secure the area immediately to ensure damage from the event to people, environment, property or critical systems are mitigated. Where possible, appropriate actions must be taken to ensure the incident does not escalate and the area is made safe.

In addition to this, the Work Health and Safety Act 2011, Work Health and Safety Regulations 2011 and the Electrical Safety Act 2002 require the following to occur at the workplace.

Following serious bodily injury the scene of the incident must not be interfered with except to:

- save a life;
- relieve suffering; or
- prevent injury to a person or property damage

Refer to the **Section 7: Definitions** for a definition of Serious Bodily Injury.

### 4.3 Mandatory Medical Treatment

Where a person sustains an electric shock (regardless of the source of supply), they:

- Shall report or be transferred to the first aid centre immediately;
- Shall be transported by ambulance to a medical provider for an appropriate assessment and monitoring (e.g. ECG). The medical provider will determine if further investigative tests are required; and
- Their supervisor or a management representative shall accompany them to the medical provider.

The medical provider is to provide clearance in order for the affected person to return to site to resume duties.

### 4.4 Notification/Reporting

Following the incident the following reporting is to occur:

#### 4.4.1 Internal Reporting

All electrical incidents are to be reported internally in accordance with CS-IM-01 Incident Management.

#### 4.4.2 External Reporting

Certain incidents must be reported, in the approved form, to Workplace Health and Safety Queensland or the Electrical Safety Office. Workplaces must also keep records of particular incidents for a certain time. Refer to the following table:

Incident Type	Notification	Time Frame
Dangerous Electrical Event	Electrical Safety Office	24 hours
Serious Electrical Event	Electrical Safety Office	24 hours
Serious Electrical Event causing death	Electrical Safety Office	Immediate by Phone 1300 369 915

#### 4.5 Incident Investigation

All electrical incidents are to be investigated internally in accordance with incident category and CS-IM-01 Incident Management.

### 5 DEFINITIONS

Term	Definition
<b>AC</b>	Alternating Current
<b>DC</b>	Direct Current
<b>Electric Shock</b>	The physio pathological effect resulting from the direct or indirect passage of an external electrical current through the body. It includes direct and indirect contacts and both unipolar and bipolar currents.
<b>Electrocution</b>	Electrical incident resulting in a fatality
<b>Dangerous Electrical Incident</b>	Is any of the following— <ul style="list-style-type: none"> <li>a) The coming into existence of circumstances in which a person is not electrically safe, if—               <ul style="list-style-type: none"> <li>i. the circumstances involve high voltage electrical equipment; and</li> <li>ii. despite the coming into existence of the circumstances, the person does not receive a shock or injury;</li> </ul> </li> <li>b) The coming into existence of both of the following circumstances—               <ul style="list-style-type: none"> <li>i. if a person had been at a particular place at a particular time, the person would not have been electrically safe;</li> <li>ii. the person would not have been electrically safe because of circumstances involving high voltage electrical equipment;</li> </ul> </li> <li>c) An event that involves electrical equipment and in which significant property damage is caused directly by electricity or originates from electricity;</li> <li>d) The performance of electrical work by a person not authorised under an electrical work licence to perform the work;</li> <li>e) The performance of electrical work by a person if, as a result of the performance of the work, a person or property is not electrically safe;</li> <li>f) The discovery by a licensed electrical worker of electrical equipment that has not been marked as required under this Act.</li> </ul>
<b>Serious Electrical Incident</b>	Is an incident involving electrical equipment if, in the incident— <ul style="list-style-type: none"> <li>(a) a person is killed by electricity; or</li> <li>(b) a person receives a shock or injury from electricity, and is treated for the shock or injury by or under the supervision of a doctor; or</li> <li>(a) a person receives a shock or injury from electricity at high voltage, whether or not the person is treated for the shock or injury by or under the supervision of a</li> </ul>

Term	Definition
	doctor.
<b>Serious Bodily Injury</b>	Means an injury to a person that causes— a) the injured person's death; or b) the loss of a distinct part or an organ of the injured person's body; or c) the injured person to be absent from the person's voluntary or paid employment for more than 4 days.
<b>High Voltage</b>	Above 1000 volts (AC) or 1500 (DC).
<b>Low Voltage</b>	50 up to 1000 volts (AC) or 120 up to 1500 volts (DC).
<b>Extra Low Voltage</b>	Not exceeding 50 volts (AC) or 120 volts (DC).
<b>Competent Person</b>	A person who has through a combination of training, education and experience, acquired knowledge and skills enabling that person to perform correctly a specified task.

## 6 REFERENCE DOCUMENTATION

Reference No	Reference Title	Author
<a href="#">"B/D/11/30977"</a>	CS-OHS-M-01 - CS Energy PTW Manual	CS Energy
	Queensland Health and Safety Regulations 2011	Qld Government
	Queensland Electrical Safety Act and Regulations 2002	Qld Government
<a href="#">"B/D/11/45318"</a>	CS-IM-01 - Incident Management	CS Energy
<a href="#">"B/D/11/30957"</a>	CS-OHS-31 - Electrical Safety Management	CS Energy

## 7 APPENDIX

### 7.1 APPENDIX 1 – Potential Effects of an Electrical Shock

#### Background Information

The effect of an electrical current on the body depends on:

- (b) The magnitude of the current (amps);
- (c) Its frequency (hertz); and
- (d) Its path.

It is the current that determines both the heat released and the effect on the body. The current is determined by the voltage and resistance. Resistance can be influenced by environmental factors, the condition of the skin, contact area and individual factors.

For example: where a person is soaking wet with no shoes on (low resistance) and connected to a 240 Volt outlet, it is likely that they will suffer a severe electric shock. Where the person comes into contact with the same outlet and they are dry with good boots on (high resistance), it is likely they will receive a lesser shock.

#### Muscle Contraction

Electric current may result in muscular contractions (i.e. of the hand and arm) that prevent the casualty from letting go of an energised object. The muscle contractions cannot be overcome voluntarily. The 'let go' current varies from person to person with the average for men being 16mA and for women 10.5mA. The casualty may be able to disconnect themselves from the electrical supply using other parts of their body.

Where the current passes through the heart, uncoordinated contraction of the heart muscle may result in ventricular fibrillation. Ventricular fibrillation is the most common cause of death following an electric shock and the likelihood of ventricular fibrillation will depend on the current and the duration of the shock. For a shock of a few milliseconds duration, ventricular fibrillation is unlikely to occur except in high voltage incidents. The contact time necessary to induce ventricular fibrillation with 240V is unlikely to be less than 0.5 seconds.

#### Asphyxia

Asphyxia can occur as a result of: *inhibition of the respiratory system*, usually as a result of the current pathway being from head to limb; *tetanic contraction of respiratory muscles*, through an alternating current pathway passing across the chest; and *ventricular fibrillation*.

#### Burns

Electrical burns result from the rise in temperature that occurs due to an electrical current flowing through the body. Because of the "cooking effect" on deeper tissues, such as muscles, an electrical burn may be much more serious than it initially appears. Thermal burns may occur due to an electric arc between the live conductor and the casualty. This can occur due to either contact with the live conductor or approaching sufficiently close to it. The arc is an unstable stream of ionised gas with a core temperature of many thousands of degrees. Thermal burns can also occur from other causes eg. electric ignition of flammable materials.

At low voltage contacts, burns are usually localised at the point of contact with the electrical source. The heating effect of the current may result in the burn being quite deep. At high voltage contacts (and in some cases low voltage), the current may pass through the body leaving entry /exit burns and damage to internal organs and muscles

#### Secondary Effects

Secondary effects may occur as a result of, for example, a fall or fire.