

# **General: What hazard does electricity pose in the workplace?**

Electricity is invisible - this in itself makes it dangerous. It has great potential to seriously injure and kill. The average person can receive critical injuries as a result of even very short exposures to everyday 240-volt single- phase alternating current supply volt- ages.

Major electrical risks exist when insulation protection is not maintained in a safe condition or is placed in a hostile environment causing it to fail.

Circuit breakers and fuses provide some protection at times when sufficient current causes them to operate in the following situations:

- short circuits between live parts
- between live parts and exposed metal parts.

However, circuit breakers do not provide reliable personal protection when one or both protections fail. These failures could be due to a lack of regular maintenance, mechanical damage or being operated in hostile environments.

In order to be effective as personal protection, a circuit breaker or fuse must operate before the potential difference or voltage reaches a level high enough to cause an electric shock to personnel. This electric shock can result from any exposed conductors, exposed metal or other unrelated conductive paths (eg, water or dust).

The average-sized human will be exposed to approximately 0.2 amps when exposed to 240 volts ac. This can be potentially fatal within one to ten seconds. Therefore, reliance on 10 or 15 amp 'circuit breakers' as the only 'protective' measure for personal protection is often useless.

There is a high risk of serious injury to people, which is why normal circuit breakers should only be regarded as property, installation or electrical plant protectors, and not as personal protective devices.

Conducting regular maintenance and testing of electrical installations and electrical plant will reduce the chances of an electric shock or fire. Residual current devices (RCDs or 'safety switches') have been devised for personal protection. RCDs are efficient detectors of very low levels of electric current leakage from the active or neutral conductors to earth, and operate at speeds that provide total current shutdown before the current becomes a threat to the operator.

source: <http://www.safework.sa.gov.au/contentPages/docs/resElectGuidelines.pdf.pdf>

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