



# **SAFETY TRAINING LEAFLET 16 ELECTRICITY**

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# SAFETY TRAINING LEAFLET 16

## ELECTRICITY

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## 1 Introduction

### 1.1 Safety leaflets

Safety training leaflets summarise the basic operational safety knowledge which needs to be known by employees working in the gas industry.

Refer to EIGA Doc 23 *Safety Training of Employees* for the various combinations of leaflets which define the scope of safety training for a variety of specific jobs.

Each leaflet addresses a specific topic as identified in the title.

### 1.2 Comprehension tests

There is a comprehension test for each leaflet, included in **Appendix 1**.

Each test comprises several questions. To pass the test it is suggested that the employee should score 75% at the first attempt. Incorrect answers should be discussed to confirm understanding.

**Appendix 2** includes the list of correct answers.

## 2 Electricity

### 2.1 Rules and qualified personnel

Electricity is hazardous. You cannot see it. Strict adherence to safety rules by qualified personnel is essential to prevent accidents.

- 1) Only personnel qualified and authorized for the specific voltage shall have access to any electrical cabinet.
- 2) Electrical circuits shall be de-energised, isolated and secured using lock-out / tag-out in accordance with applicable procedures. - See Safety Training Leaflet 23 - Work Permit.
- 3) Never switch electricity "on" and "off" with wet hands or when standing on a wet floor.
- 4) Always allow easy access to cabinets, switches, plugs and electrical equipment.
- 5) Do not store combustible materials near electrical switchgear or equipment.
- 6) Keep electrical equipment dry and clean.
- 7) Avoid using multi-socket adapters. They may overload the circuit and cause overheating, short-circuit and fire.
- 8) Troubleshooting or repair of energized electrical equipment requires specific procedures and permits.

### 2.2 Maintenance and repairs

Electricity can be hazardous if it is not handled properly. Poor maintenance or poorly executed repairs may result in fires or electric shock.

- 1) Do not attempt to carry out electrical repairs unless you have been properly trained and are authorised to do so. When in doubt, do not attempt to use or repair the equipment; contact a qualified electrician.
- 2) If at any time an electrical plug, connector or cable is found to be hot or exhibits evidence of burns, do not use it and report it immediately to your supervisor.
- 3) In the event of a fire involving electrical equipment, switch off the power and then use a carbon dioxide or dry powder extinguisher. Do not use water or foam (see Safety Training Leaflet 17 *Fire*).

- 4) If a fuse blows, have it replaced by a similar one (ask the electrician). Do not use a fuse of higher rating as this may not protect the equipment. If the replacement fuse blows within a short time, then have the equipment checked by an electrician.
- 5) Never replace a fuse by some makeshift item such as a piece of wire, a nail, or aluminium foil. This is highly dangerous. The same applies if a residual current device (RCD) trips or is defective.

### 2.3 Electric shocks

Any electric shock, no matter how slight, is a warning that something is wrong.

- 1) If you receive a shock - switch off the power, label the equipment so that no-one else will try to use it and report the matter to your supervisor.
- 2) If someone is suffering from electric shock and is still in contact with the electrical supply do not touch the person with your bare hands. If possible, switch off the electricity and apply appropriate first aid. Call for assistance.
- 3) If you cannot de-energize the circuit/equipment, try to push the person away using a long wooden pole or equivalent object made of non-conductive material before attempting first aid. Call for assistance.
- 4) Anyone who has suffered an electric shock shall be sent to hospital for medical checkup.

### 2.4 Correct use of electrical equipment

Many items of electrical equipment like switches or some motors, produce sparks when in use or when switched off and on. They can therefore be a ignition source of for flammable atmospheres. ..

- 1) Do not introduce unauthorised electrical equipment e.g. phones, tablets, laptops, torches, radios, portable power tools, into potentially flammable atmospheres such as acetylene plants or flammable gas cylinder filling areas (hydrogen and hydrogen mixtures...), usually marked as ATEX zones.
- 2) Never use a mobile phone in a flammable atmosphere area (ATEX) unless suitably rated.

**Appendix 1 – Electricity – Test Questions**

*Tick the correct answer (s) or write in the blank spaces as requested.*

1. Which factors influence the seriousness of an electricity-related accident?
  - A. Contact time
  - B. Contact voltage
  - C. Current
  - D. Skin dampness
  - E. Contact surface area
  - F. All of the above
  
2. In the event of a fire in an electrical panel or motor, which extinguishing agents could be dangerous if used?
  - A. Water
  - B. Foam
  - C. Multipurpose dry powder
  - D. Halon
  - E. Carbon dioxide
  - F. Dry sand
  
3. If the replacement fuse blows within a short time, the new fuse must be of a higher rating
  - A. True
  - B. False
  
4. Any repair or maintenance work on an electrical unit that requires disconnecting the power supply during the entire process, carried out either by our employees or by hired staff, must be covered using a Work Permit.
  - A. True
  - B. False

**Appendix 2 - Electricity – Test Answers**

1. F
2. A and B
3. B
4. A