



SAFETY TRAINING LEAFLET 16 ELECTRICITY

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ELECTRICITY

Prepared by Safety Advisory Council

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Note: this Safety Training Leaflet is taken from Leaflet 15: ELECTRICITY in Doc 23/08 Safety Training of Employees. The leaflet has been put into a new format and revised.

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. Only full respect of stringent rules by qualified personnel will prevent accidents.

- 1) Only qualified personnel can open electrical cabinets and work on electrical circuits.
- 2) Always de-energize, isolate and lockout the electrical circuits before making repairs or adjustments - 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 switches, plugs and electrical equipment.
- 5) Do not store combustible materials near electrical switchgear or equipment.
- 6) Keep electrical equipment dry and clean.
- 7) Do not use adaptors or multi sockets. 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. If in doubt - do not attempt to use or repair the equipment but call an 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 and report it immediately to your supervisor.
- 3) In the event of a fire on 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, silver paper, etc... This is highly dangerous.
- 6) The same applies to replacing a differential protection device trips or is out of service.

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 artificial respiration if the person has stopped breathing. 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 mean of non-conductive material before attempting first aid. Call for assistance.

2.4 Correct use of electrical equipment

Many items of electrical equipment - e.g. switches, some motors, produce sparks when in use or when switched off and on and so can be a source of ignition for flammable atmospheres, usually marked ATEX.

- 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.
- 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. Contact intensity
 - 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. What is a “safety voltage” for work in dry environments?
 - A. 135 V
 - B. 240 V
 - C. 48 V
 - D. 380 V

5. The protection against an electrical shock is provided by:
 - A. Bursting disc
 - B. Residual current device
 - C. Magneto- thermal switch systems
 - D. Safety valve

6. Which of these actions is the **priority** before starting electrical repairs or adjustments?
 - A. Check the earthing
 - B. Measure the cut-off intensity of the differential switch
 - C. De-energise, isolate and lock-out. the electrical circuits

7. What is the parameter that measures the amount of electricity that passes through an object?

8. 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. C
5. B
6. C
7. **Amperes**
8. A