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National Council for
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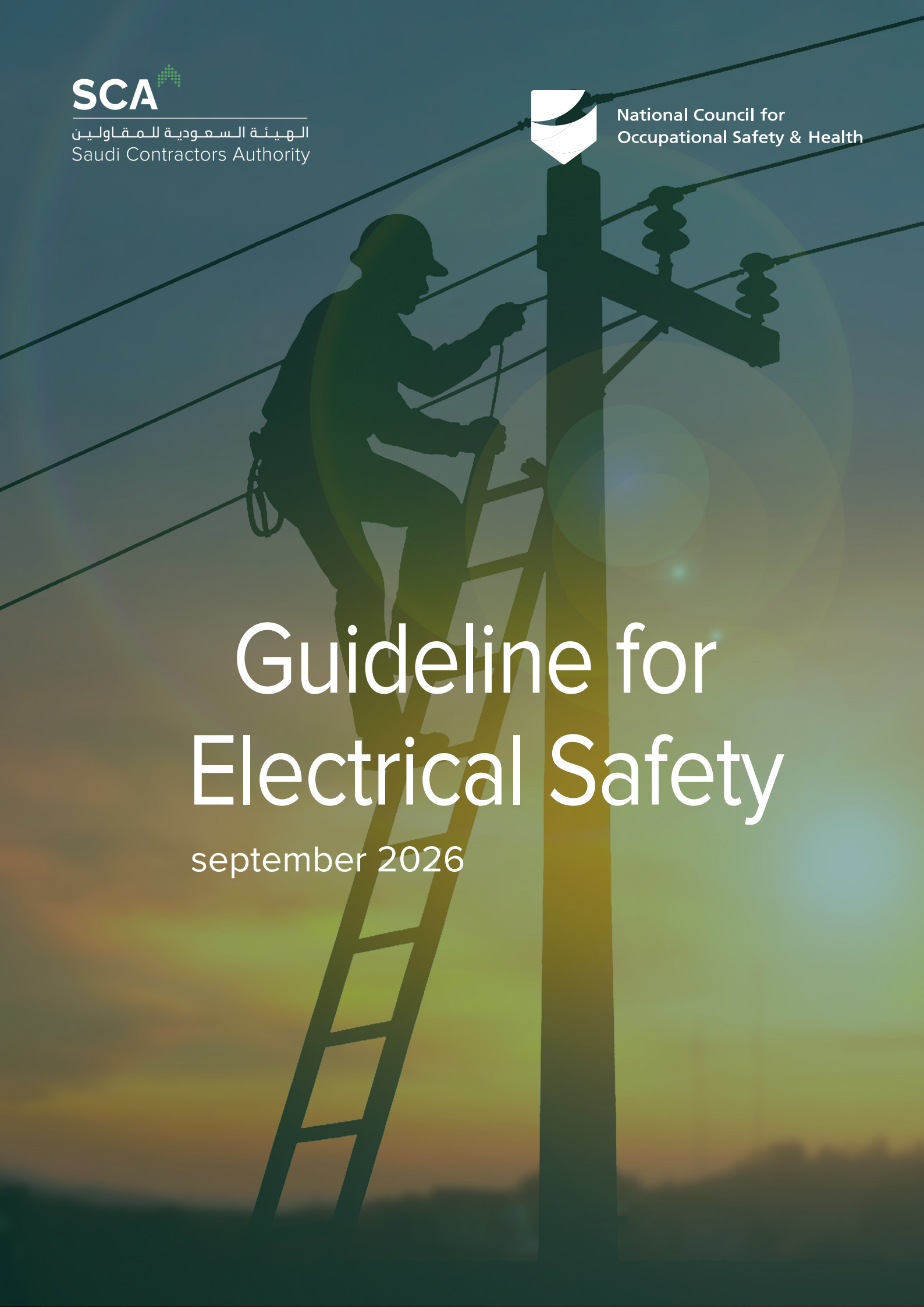
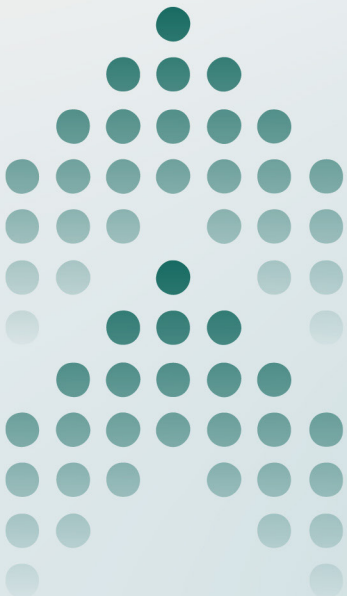


Guideline for Electrical Safety

september 2026




بسم الله الرحمن الرحیم

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Introduction

Electrical hazards are among the most serious occupational risks in industrial, construction, and service work environments, due to their potential to cause severe injuries such as electric shock, burns, fires, and arc flash explosions.

Although electricity is an essential component of all operational activities, its improper use or inadequate control measures poses a direct threat to workers' lives and the safety of facilities.

Therefore, the implementation of electrical safety controls is a fundamental element within occupational risk management systems, ensuring the protection of workers, the integrity of facilities, and the continuity of operations.

Purpose of the Guideline:

This guideline aims to:

- Raise awareness of electrical hazards in workplace.
- Clarify the basic requirements for preventing electrical accident.
- Support organizations in establishing electrical safety controls and procedures.
- Reduce injuries and incidents associated with electrical energy.
- Enhance compliance with relevant national regulations and standards.

Target Audience:

This guideline is intended for the following groups:

- Employers and facility managers.
- Occupational safety and health officers.
- Electrical engineers and technicians.
- Maintenance and operation supervisors.
- Contractors performing electrical work.
- Workers in locations containing electrical installations.

Common Electrical Hazards

Electrical hazards include the following:

- Electric shock.
- Electrical burns.
- Arc flash.
- Electrical fires.
- Falls resulting from electrical shock.

Causes of Electrical Accidents

Some of the most common causes of electrical accidents include:

- Unsafe or improper wiring connections.
- Damaged or exposed wires.

- Absence of grounding systems.
- Circuit overloading.
- Failure to disconnect power during maintenance work.
- Use of non-compliant equipment.
- Lack of training

Hierarchy of Electrical Hazard Control

Electrical hazards are recommended to managed according to the hierarchy of hazard control:

- Eliminate the energy source where possible.
- Replace unsafe equipment.
- Apply engineering controls (circuit breakers – insulation – grounding).
- Establish safe work procedures and work permits.
- Use personal protective equipment as the last line of defense.

Classification of Electrical Work

Electrical work can be classified into:

- Work on de-energized circuits.
- Work on energized circuits.
- Work Near Electrical Energy Sources.

Note: Work on energized circuits must be justified and formally approved, and is subject to a specific risk assessment and a work permit.

Basic Safety Controls

First: Isolation and Energy Control (Lockout / Tagout – LOTO)

- Disconnect the power source before maintenance work.
- Use locks and warning tags.
- Verify absence of voltage before starting work.
- Prevent unauthorized re-energization.

Second: Grounding Systems

- Ensure the presence of an effective grounding system.
- Periodically test grounding resistance.
- Do not use equipment without proper grounding.
- Document inspection and test results.

Third: Electrical Panels and Equipment

- Keep panels closed and secured.
- Install clear warning signs.
- Prohibit storage in front of electrical panels.
- Maintain adequate safety clearance.

Fourth: Use of Tools and Equipment

- Use insulated tools when working on electrical circuits.
- Inspect cables before use.
- Avoid long-term use of temporary connections.

Personal Protective Equipment (PPE) for Electrical Work

Includes:

- Insulated electrical gloves.
- Insulated safety footwear.
- Protective helmet.
- Arc flash face shield.
- Arc-rated clothing.

Note: PPE is selected based on voltage level and arc flash risk assessment.

Safe Work Requirements

To ensure a safe working environment when using electricity, it is recommended to consider the following:

- Issue electrical work permits for high-risk tasks.
- Prohibit lone working during hazardous tasks.
- Provide direct supervision.
- Establish a clear emergency response plan.

Emergency Response

In the event of an electrical accident:

- Do not touch the injured person before disconnecting the power source.
- Use an insulating object to separate the victim if power cannot be disconnected immediately.

- Call emergency services immediately.
- Provide first aid once the absence of electrical current is confirmed.
- Report the incident according to approved procedures.

First Aid

In case of exposure to electric shock or electrical burns, the following procedures are carried out:

- Treat burns or electrical injuries according to the type of injury.
- Move the affected person to a safe area and ensure proper ventilation if necessary.
- Seek medical assistance immediately if needed.
- Document the incident and report it to the occupational safety and health authorities.

Training and Awareness

- Be performed only by qualified personnel.
- Involve periodic training for workers.
- Include documentation of competency and professional licenses.
- Provide hazard awareness for non-electrical worker.

Common Mistakes to Avoid:

- Working on energized circuits without justification.
- Bypassing protection systems.
- Using damaged equipment.
- Ignoring warning signs.
- Relying on experience without following procedures.

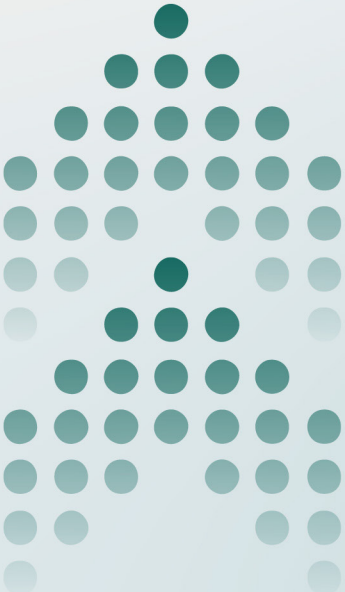
Conclusion

Electrical safety is an integrated system that relies on proper planning, engineering controls, continuous training, and strict adherence to procedures.

Any negligence in applying safety controls may result in serious injuries or significant material losses.

Therefore, adopting a preventive culture and maintaining professional compliance are fundamental pillars for protecting lives and ensuring a sustainable and safe work environment.







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