Ministry of Labour

Decision No. (31) of 2013 regarding the Protection of Workers from electrical hazards in facilities and work sites

The Minister of Labour:

After reviewing the Law No.(25) of 2009 approving the Accession of the Kingdom of Bahrain to the Convention of the International Labour Organisation No. (155) of 1981 concerning Occupational Safety and Health and Working Environment;

Labour Law for the Private Sector promulgated by Law No.(36) of 2012, particularly Article (166) thereof;

Decree No.(7) of 1983 approving the Accession to the Arab Agreement No. (13) of 1981 concerning Working Environment;

Decree No. (2) of 1994 regarding the Accession of the State of Bahrain to the Arab Agreement No. (7) of 1977 and Arab Recommendation No. (1) of 1977 regarding the Occupational Health and Safety Conditions;

And the decision of the Minister of Labour and Social Affairs No. (33) of 1977 regarding the identification and organization of the services and precautions necessary to protect workers during work from electrical hazards;

And upon the submission of the Undersecretary of the Ministry of Labour,

Hereby Decides:

Article (1)

In applying the provisions of this decision, the following words and expressions shall have the meanings assigned to them below, unless the context requires otherwise:

Establishment: Any site or place in which work is undertaken whether such work is industrial, vocational, agricultural, services or such other activity.

Work Site: The site prepared by the employer for the worker to perform the work in it, and it is also included within the work sites as follows:

1) Any place in the facility where workers may be present.

2) Any room, corridor, hall, chamber, ladder, road, or other place inside the facility used by workers to enter or exit the work site.

System: An electrical system in which all conductors and devices are electrically connected to a common source of electrical power.

Connector: An electrical connector that is set up to connect electrically to a network.

Devices: Electrical appliances, including all equipment, machinery, and installations that use conductors or that form part of them.

Circuit: An electrical circuit that is an electrical system or branch of a system.

Insulating base: A floor, platform, or standing site or mat whose size, material, and manufacture are suitable for the conditions of use, ensuring sufficient protection against danger for the individual using it.

Covered with insulating material: Sufficiently covered with insulating material of sufficient quality and thickness to eliminate the danger

Insulation: In "insulating mesh", "insulating shoes" and "insulating gloves", it means that the size and material of the network, shoes, or gloves must be suitable for the conditions of use, ensuring sufficient protection against danger for the individual using them.

Exposed: not covered with insulating material.

Live: Electrically charged.

Dead: When electrically at or around zero voltage and not connected to any live circuit

Grounded: Connected to the basic ground in a way that ensures immediate discharge of electrical energy at all times without danger.

Substation: Any location or part of a location where energy is converted or current is changed, except for the purposes of work tools, calibration devices, or similar devices if these locations or parts of them are wide enough to allow entry of an individual after the devices are put in site.

Keyboard panel: Any set of electrical keys, fuses, conductors, and other devices connected to them used to control the current in any electrical system or part of that system.

Keyboard panel aisle: Any aisle or cabin that accommodates a single person and is connected to the keyboard panel and is charged.

Static electricity: Electricity that results from the contact, separation, or friction of two materials, one of which may be a conductor of electric current or both are insulators of electric current, or as a result of electric induction from charged bodies where these charges are generated and their energy increases as a result of mechanical processes such as friction or contact between the surfaces of particles and solid or liquid bodies, or as a result of collapse or rapid separation of these particles and bodies.

Responsible Person: the employer or contractor who is contracted with the employer or an employee, appointee, or selected by the employer or contractor to perform tasks related to generating, converting, distributing, or using electrical energy, provided that the employer or contractor or the employed, appointed, or chosen person is qualified to perform the duties imposed on him according to the provisions of this decision.

Qualified person: a trained person with sufficient experience and not suffering from any physical defect or disability that may prevent him from performing the work properly.

Hazard: the risk to health or life or any part of the body as a result of shock, burn, or any other injury that may occur to the employees or as a result of a fire that may occur during the processes of generating, converting, distributing, or using electrical energy.

Article (2)

The employer is committed to taking the necessary precautions to protect his employees or those present at his facility or work site from electrical hazards, providing them with protection services and rescue means, as stated in this decision.

Article (3)

The employer is prohibited from charging the workers any expenses or deducting any amounts from their wages in return for providing this protection.

Article (4)

The worker is prohibited from committing any act or negligence intended to prevent the implementation of instructions or misuse or damage of the means provided to protect the health and safety of workers at the facility or work site where he works.

Article (5)

The person who installs and repairs electrical devices, machines, and connections must be qualified and hold a license approved by the relevant authority for electricity affairs.

The employer must ensure the competence of these devices' operation by a qualified person at least every three months, and the results must be recorded in a special register kept by the facility or work site.

Article (6)

The worker must use appropriate and suitable personal protective equipment when performing any electrical work and must take care of it and follow the instructions to preserve their health and protect themselves from electrical hazards.

Article (7)

In all cases, work in live conductors or near them must be avoided, except in the following two cases:

1) If working on these conductors or near them is practically impossible while they are dead.

2) If it is possible to work safely on these conductors or near them, with the provision of appropriate protection using personal protective equipment.

Article (8)

All conductors must either be covered with an insulating material and effectively protected to prevent danger, or sited and maintained in such a way that danger can be prevented as much as possible practically. Similarly, for the equipment and tools used for maintenance purposes, they must be insulated against electrical faults.

Article (9)

Effective and clearly defined means must be provided appropriately for fully separating the voltage from each part of the electrical system as necessary to prevent danger.

Article (10)

Effective and proportionate means must be provided to protect against the increase of current when using any voltage in each part of the electrical system as necessary to prevent danger.

Article (11)

The general arrangement of the keyboard panels should be as follows:

1) The electrical distribution panels should be in a safe site and connected to all electrical devices or circuits in a secure manner.

2) The control of electricity through these panels should be easy, and all parts that need to be adjusted or handled should be readily accessible to the operator responsible for this.

3) The path of each connector should be easy to trace in case of necessity.

4) Connections, wires and electrical devices connected to the panels should be safe, sound, and able to withstand the electrical voltages required to operate the machines.

5) Automatic circuit breakers should be installed to separate the current when any increase in electrical voltage or electrical short circuit occurs.

6) Provide appropriate and sufficient lighting in the sites where the electrical equipment is located (electrical panels - switchboards) in order to provide safety and security for those who carry out maintenance.

Article (12)

All devices related to the keyboard panel that need to be handled by hand should be sited or arranged as much as possible so that the operator responsible for operating them can do so while on the platform dedicated to the keyboard panel. Additionally, all measuring tools and

indicators connected to it should be sited in a way that can be observed from the work platform. If it is necessary to operate or observe these devices from any other location, precautionary measures must be taken to prevent danger.

Article (13)

In all conductors and devices exposed to air, humidity, or rust in a flammable environment or in an explosive atmosphere and used in any operation or for any special purpose other than lighting and energy, they must be manufactured, assembled, or equipped with sufficient protective means as necessary to prevent the danger resulting from such ignition or exposure to the mentioned factors.

Explosion-proof lighting fixtures that can contain any explosions inside and not allow them to escape to the surrounding air and cause a fire should also be used in hazardous classified areas, such as gas and flammable vapour gathering sites.

Article (14)

Instructions for treating persons who suffer from electric shock must be posted in all sites where electrical energy is generated, transformed, or used above low voltage levels. The aforementioned instructions shall be posted in sites where electrical energy is generated, transformed, or used at low voltage levels as determined by the authority concerned with electrical affairs.

Article (15)

1) A substation equipped with serious ventilation means shall be established so that it remains dry, and shall be prepared so that no one can access it except the responsible person, either through the usual entrance, or by controlling the device or conductors inside from outside.

2) Each substation shall be under the supervision of a responsible person, and no person other than the responsible person or a person working under their direct supervision shall be allowed to enter any part of it that may pose a danger.

3) In every underground substation that is not easily and safely accessible, or is not sufficiently spacious and contains other movable machines other than ventilation fans or high voltage, it must be provided with a suitable means of access through a fixed staircase and entrance so that no part is charged with any keypad or bare conductor within reach of the person inside. However, the means of access to the inside of this substation must be through an entrance and ladder, if an employee in charge of working there regularly for a purpose other that inspection and cleaning is able to.

4) The use of metal ladders or non-isolated manual tools when working with electrical devices is prohibited.

Article (16)

All electrical equipment, machines, and tools must be provided with a switch to cut off the electrical current. These switches must be isolated, safe, and appropriate for the nature of the work at various locations and in easily accessible sites in case of emergencies.

Article (17)

Instructional and warning signs must be sited next to devices and connectors carrying electrical current, indicating the amount of voltage flowing through them, especially for devices carrying high voltage. These signs must be clear, easy to read in all work areas, corridors, platforms, and all necessary and essential equipment and machines.

Article (18)

When using electrical systems, operational processes and protection of electrical equipment, the following must be observed:

1) Electrical systems must be manufactured at all times to protect from risks as much as possible practically.

2) Electrical systems must be manufactured at all times to protect from risks as much as possible practically.

3) All operating procedures, including operation, use, and maintenance of electrical work systems, or near the electrical system, must be carried out in a safe manner to protect from danger as much as possible practically.

4) The means of protection sited to protect individuals during work or near the electrical system shall be appropriate for the function assigned to them, and shall be maintained to perform their function properly and shall be used properly.

Article (19)

It is mandatory to refrain from using any electrical equipment if its power and capacity can be exceeded, which may lead to an imminent danger to workers.

Article (20)

Necessary protection must be provided for electrical devices, which must be built and protected from the following factors:

1) Mechanical damages.

2) Weather and natural factors.

3) The effect of moisture, dirt, dust, or other factors that lead to metal corrosion.

4) Any flammable or explosive materials including dust, vapour and gases.

Article (21)

When using electrical conductors, protective and insulation tools, the following must be observed:

1) Suitable and appropriate insulation and protection using insulation materials to protect against electrical hazards, wherever practically possible.

2) Taking the necessary and appropriate safety precautions when working and using electrical conductors, protective tools, and insulation to prevent risks, wherever practically possible.

Article (22)

Suitable safety precautions must be taken by grounding the connections and electrical equipment or by any suitable method to protect against electrical hazards during work and when using electrical systems or in the presence of a technical malfunction in them.

Article (23)

The safety of electrical conductors must be ensured when connecting to grounding or any other point, and suitable and appropriate precautions must be taken to prevent electrical conductor risks.

Article (24)

1) Periodic inspection must be carried out on all cables, wires, connections and all electrical appliances, and the necessary periodic repairs and inspection must be carried out to be permanently intact to prevent the occurrence of short circuits and avoid the dangers of fire,

electrocution, etc., provided that any defect detected is repaired immediately.

2) Before performing maintenance work on installations or electrical equipment, the electrical current must be disconnected from them and the electrical devices must be grounded, and the necessary precautions must be taken to prevent the current from accidentally reaching them during maintenance (warning signs should be posted), and each circuit must be tested before maintenance work is performed to confirm that the current has been disconnected from it.

3) Educational and warning instructions must be sited next to the devices and conductors carrying electric current, indicating the voltage carried by them, especially devices carrying high-pressure currents, and they must be clear and easy to read in all work sites, corridors, and platforms, and at all necessary and essential machines and equipment.

4) Non-conductive parts carrying electric current that are easily charged electrically should be connected to an earth connection, such as petroleum pipelines, conveyors, and other moving electrical means.

5) The employer must provide various equipment and facilities used in fire prevention in the event of electrical hazards and train workers in their use.

6) The employer must prominently display detailed and clear instructions regarding electrical tension and must site approved warning signs in front of hazardous facilities and work sites in a clear and understandable manner.

Article (25)

The employer or their representative must take all necessary measures for the following static electrical evaluation procedures:

1) severity of static electrical fields must be evaluated in the following cases:

a. When starting to use direct current electrical equipment with high voltage.

b. When introducing a new technological process accompanied by electrical feeding of the new equipment.

c. When making any changes in the design of power stations, technological processes, and after performing maintenance operations.

d. When organizing a new location.

e. During the inspection process of the electrical equipment and the technological process in operation.

2) The severity of static electrical fields must be measured at least three times at the level of the worker's head and chest, and the highest value of these measurements is considered.

3) The severity of static electrical fields in the work environment must be measured using either a composite measurement of the total severity value or the measurement factor of this value.

Article (26)

The employer must take all preventive measures against the hazards associated with static electricity by addressing the source of the danger as a basis for protection and preventing it from developing into critical situations with unpredictable consequences. The employer must also develop prevention programs based on detailed evaluation results of the conditions and situations where static electricity accumulates.

Article (27)

The employer or their representative must secure and provide suitable means of protection for workers, train workers on how to use, maintain, and preserve them, and obligate them to use them, especially in cases where the actual levels of static electric field intensity are high.

Article (28)

The provisions of this Decision shall be applicable to all facilities and work sites subject to the provisions of the Labour Law for the Private Sector promulgated by Law No.(36) of 2012.

Except for portable devices that are part of permanent electrical installations in any facilities or work sites, if these devices or installations are used for lighting purposes only.

Article (29)

All existing facilities and work sites at the time of this decision's enforcement must reconcile their conditions with its provisions within three months from the date of its implementation.

Article (30)

Any person who violates the provisions of this Decision shall be liable for the penalties provided for in Article (192) of the Labour Law for the Private Sector promulgated by Law No.(36) of 2012.

Article (31)

The decision of the Minister of Labour and Social Affairs No. (33) of 1977 regarding the identification and organization of the services and precautions necessary to protect workers during work from electrical hazards is repealed, as well as any provision contrary to the provisions of this decision.

Article (32)

The Undersecretary of the Ministry of Labour shall implement this decision, and it shall come into force from the day following the date of its publication in the Official Gazette.

The Minister of Labour

Jameel bin Mohamed Ali Humaidan

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Corresponding to: 30 May 2013