

## **M9-EN.6 ELECTRICAL HAZARDS**

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### **Short description of the chapter**

The chapter presents and analyses electrical risk factors which are encountered by employees using electrical appliances in their work places (see M9-EN.1.2 and M9-EN.1.3 Description of activity of employees in hotels and restaurants).

### **Goals of this chapter:**

- Explain definitions electrical equipment and electrical safety
- Discuss electrical hazards and effect on human health
- Present available safety measures preventing or minimizing the negative effect on human health

Information presented in this chapter will help the managers to determine electrical risk factors in hotel and restaurant sector, to assess each particular situation and take appropriate preventive measures to prevent or minimize the risk

### **M9- EN.6.1 Electrical appliances and electrical safety**

Electrical appliance (equipment) means any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire used for controlling, generating, supplying, transforming, transmitting or using electricity. (**M9.6.1.jpg**)

Electrical equipment is divided into:

- Fixed - These are electrical equipment installed in a specific work place (electric ovens, grills, stoves)
- Portable - Any equipment that has a lead and a plug and may be easily moved from one place to another (e.g. office equipment such as copiers, fax machines, desktop computers, kitchen equipment such as mixers, cutting, beating, mincing and similar appliances, laundry equipment such as irons, cleaning equipment such as vacuum cleaners, floor cleaners)

Taking into consideration type of activities of employees working in hotel and restaurant sector and tools and equipment used (see: M9-EN.1.2, M9-EN.1.3) we may see that almost all employees use electrical equipment and are exposed to electrical hazards.

Electrical safety first of all, is relates to:

- Technical measures
- Organizational measures
- Legal norms

that are used to protect employees from dangerous or hazardous effect of electric current, electric arc, electromagnetic field and static electricity

### **M9- EN.6.2 Types of electrical hazards and their effect on human health**

#### **M9.6.2.jpg**

Electrical injury occurs when electric current passes through human body:

- after directly contact with the parts with potential difference
- during unauthorized presence in high voltage zone where electric arc is created across an air gap between the human being and voltage

The following shall be determined in the assessment of electrical risk:

- Is there a possibility of direct contact with electrical conductor or metal part located under voltage (e.g. is distribution panel locked)?
- Is written procedure of using electrical equipment (installation, maintenance, repairs, modification) developed and maintained?
- Is frequency of electrical equipment maintenance determined?
- Due to hazardous conditions of operation portable kitchen equipment should be inspected monthly
- Overall check-up and testing should done every six months
- Hotel electrical equipment should be visually inspected every 6-12 months
- Overall technical check-up and testing should be done every 1-5 years.
- Are persons in charge of electrical safety appointed?
- Do person in charge of electrical safety hold required qualifications and permits?
- Have employees using electrical equipment received proper training?

- Are electrical equipment operation instructions complied with?
- Are electrical equipment, cables, switches, sockets in good working condition (##W29##)?

Electric current may cause internal and external body injuries:

- Burns of different degree
- Metallization of skin
- Scars
- Inflammation of eye membrane
- Breathing disorders
- Blood vessel disorders
- Ventricular fibrillation
- Loss of consciousness
- Death

The effect of electric current depends on:

- intensity of current
- duration of impact
- path the current takes
- resistance of the body

While providing first aid the first thing is to discontinue the hazardous effect of electricity:

- Switch off the power in the distribution panel
- Push the injured person away from the source of electric current using a non-conductive object such as a dry wooden or plastic stick
- Provided first aid depending on the type of injury (put a sterile bandage on the wound or burn after disinfecting edges of the wound with 5% iodine solution, give artificial ventilation or cardiopulmonary resuscitation)
- Call the ambulance and deliver the injured person to hospital

## **M9- EN.6.3 Work safety measures**

### **M9.6.3.jpg**

To avoid accidents at workplace related to electrical equipment the following shall be implemented:

- Install protection from direct or indirect contact with electric current
- Regularly inspect technical condition of electrical equipment pursuant to valid legal acts and manufacturer's instructions and ensure work safety
- Ensure that electrical equipment are regularly maintained and repaired only by qualified specialists
- Use only appropriate and tested equipment
- Make sure that electrical equipment are connected to electric current only by qualified personnel. Before choosing the connection check which current is applicable to your equipment
- Ensure that equipment are installed and operated in compliance with applicable requirements (e.g., grills cannot be placed close to the wall or partition made of flammable material, surrounding surfaces should be thermally insulated with high quality material)
- Organise training and instructions of employees
- Have employees acquainted with electrical equipment operation and handling instructions
- Ensure the compliance with equipment operating instructions
- Mark out hazardous zones

**One of the most important requirements for electrical safety is using of RCD-residual current device.**

RCD – is an electrical wiring device that disconnects a circuit whenever it detects that the flow of current is not balanced between the phase conductor and the neutral conductor.

According to the law or National Electrical Code different countries require RCDs are installed in certain areas (bathrooms, kitchens, garages, exterior areas, crawl spaces, unfinished basements, near wet bars, swimming pools, and spas), especially in wet areas.

While working with portable electric machines and tools, it is forbidden to:

- carry out repair of any manual electric machines, tools or their electric installation
- hold electrical wires and cables of machines and tools in hands

- touch cutting and moving tools, remove shaves while the machine or tool is still running
- work standing on straight single ladder
- leave electrical equipment connected to power und unattended plug-switch

**M9- EN.6.3.1 Five basic safety rules**

- Disconnect
- Tag out
- Ensure there is no voltage
- Ground and ensure discharge
- Cover or circuit break adjacent powered parts.



**M9- EN.6.3.2 Safety signs**

Hazardous places should be marked out by safety signs warning about electrical risk:



**M9- EN.6.4 Self-assessment test**

Based on the above information list electrical equipment used in different workplaces (administrative office, hotel premises, restaurant and kitchen).

Try to name the hazards caused by these equipment and safety measures to prevent these hazards.

Fill in the form below using the template. You can check your knowledge: ##D3##.

Electrical risk factors		Employee	Harm	Essential safety measures
Activity/source	Hazard description			