

Safe Work Practice Sheet	Ref: <i>SWPS</i>	Approved by: <i>Michael S McCaul</i>
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Hazards

Electrical Safety

. This Safe Work Practice Sheet Guide is aimed at safety and health practitioners, employers, managers, employees, safety representatives and others. Electricity in workplaces in Ireland is generally supplied at three distinct voltages: 110 volts, 220 volts and 380 volts. Larger industrial workplaces may have electrical supplies at higher voltages than those listed above depending on their power needs. In general with electrical work, the higher the supply voltage the higher the level of risk presented by a relevant electrical installation. However, electricity at all voltages, if not managed in a safe way, can present significant hazards to those working with electrical installations or using electrically powered work equipment.

An employer shall ensure that—

(a) all electrical equipment and electrical installations are—

(i) designed,

(ii) constructed,

(iii) installed,

(iv) maintained,

(v) protected, and

(vi) used

so as to prevent danger, and

(b) all electrical equipment and electrical installations, including distribution boards, sockets,

transformers and connections, are suitably protected from ingress of moisture or of particles

and foreseeable impacts, as appropriate to the location,

Installation

Adherence to well-understood and established good installation practice is mandatory in carrying out

installation work to ensure safety during the work activities and to ensure that the physical condition of

the completed installation is adequate for its subsequent use.

Maintenance

Regular maintenance must be carried out to ensure the safety of electrical equipment or installations.

The nature and frequency of maintenance should be adequate to prevent danger. Regular inspection of equipment should be part of any preventive maintenance programme. Maintenance

records, including the results of tests carried out during the working life of an

electrical installation, will enable employers to monitor the effectiveness of

maintenance procedures and policies. Regulation 89 deals in further detail with

testing and inspection of electrical installations.

Protection

Protection may be achieved by insulation alone, but, depending on the environment

of the installation, further physical protection may be necessary to ensure the

continuing integrity of basic insulation, e.g. conduits, trunking, armouring or tough

external sheathing on cables.

Use

Electrical equipment and installations must not be misused by users. There is a particular onus on an employer to ensure employees are supervised and trained to use electrical equipment in a safe way. For example, equipment designed for use in a dry environment should not be used in wet conditions.

What do I need to know about electricity?

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All electrical systems have the potential to cause harm. Electricity can be either "static" or "dynamic." Dynamic electricity is the uniform motion of electrons through a conductor (this is known as electric current). Conductors are materials that allow the movement of electricity through it. Most metals are conductors. The human body is also a conductor. This document is about dynamic electricity.

Note: Static electricity is accumulation of charge on surfaces as a result of contact and friction with another surface. This contact/friction causes an accumulation of electrons on one surface, and a deficiency of electrons on the other surface. The OSH Answers document on [How Do I Work Safely - Static Electricity](#) has more information.

Electric current cannot exist without an unbroken path to and from the conductor. Electricity will form a "path" or "loop". When you plug in a device (e.g., a power tool), the electricity takes the easiest path from the plug-in, to the tool, and back to the power source. This action is also known as creating or completing an electrical circuit.

What are some general safety tips for working with or near electricity?

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- Inspect portable cord-and-plug connected equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.
- Always tape extension cords to walls or floors when necessary. Do not use nails and staples because they can damage extension cords and cause fire and shocks.
- Use extension cords or equipment that is rated for the level of amperage or wattage that you are using.
- Always use the correct size fuse. Replacing a fuse with one of a larger size can cause excessive currents in the wiring and possibly start a fire.
- Be aware that unusually warm or hot outlets or cords may be a sign that unsafe wiring conditions exist. Unplug any cords or extension cords from these outlets and do not use until a qualified electrician has checked the wiring.
- Always use ladders made with non-conductive side rails (e.g., fiberglass) when working with or near electricity or power lines.
- Place halogen lights away from combustible materials such as cloths or curtains. Halogen lamps can become very hot and may be a fire hazard.
- Risk of electric shock is greater in areas that are wet or damp. **Install Ground Fault Circuit Interrupters (GFCIs)** as they will interrupt the electrical circuit before a current sufficient to cause death or serious injury occurs.
- Use a portable in-line Ground Fault Circuit Interrupter (GFCI) if you are not certain that the receptacle you are plugging your extension cord into is GFCI protected.
- Make sure that exposed receptacle boxes are made of non-conductive materials.
- Know where the panel and circuit breakers are located in case of an emergency.
- Label all circuit breakers and fuse boxes clearly. Each switch should be positively identified as to which outlet or appliance it is for.
- Do not use outlets or cords that have exposed wiring.
- Do not use portable cord-and-plug connected power tools if the guards are removed.
- Do not block access to panels and circuit breakers or fuse boxes.

- Do not touch a person or electrical apparatus in the event of an electrical incident. Always disconnect the power source first.

Person Exposed to Risk

Residents ✓ Employees ✓ Public Contractors ✓ Visitors

Work Description Staff involved in Manual handling and people moving and handling

Health and safety issues.

Electrical hazards associated with electrical systems and equipment include:

- Electric shock • Burns sustained at the point of accidental electrical contact, or due to arcing from high voltage conductors
- Fires caused by overheating or ignition of explosive atmospheres
- Secondary injuries as a result of muscle spasms during shock or, for example, falling from a ladder after a mild shock.

Every employer must deal with these hazards in order to prevent the risk of injury.

Personal protective equipment required (last resort)

Flat non slip shoes.

Initial Risk Rating (without any control measures)

Probability : **2** x Severity **2/3** = Risk Factor **4/6 Medium - High**

KEY		
PROBABILITY	SEVERITY	RISK FACTOR
Probable 3	Critical 3	1-3 Low Risk
Possible 2	Serious 2	4 Medium Risk
Unlikely 1	Minor 1	6-9 High Risk
Risk Factor = Probability x Severity		

Risk Reduction Rating (after controls introduced)

Probability : **1** x Severity **2** = Risk Factor **2 LOW Risk**

Risk Assessment Review

As and when process changes or yearly