

Legal stuff

Each year, there are approximately 1,000 electrical accidents, some of which result in fatalities. 5% of all fatal work-place injuries are caused by electricity.

There are specific Electricity at Work Regulations requiring us to ensure that all electrical equipment is properly installed and maintained so that there are no electrical hazards in the workplace. The regulations apply to both fixed and portable equipment whether it operates at high or low voltages and wherever it is used.

The regulations don't go into specific detail about the safety of installations because there are European Standards which are set out in British and Irish Standards and are generally referred to as the Wiring Regulations. These are regularly updated to reflect changes in technology and equipment.

Information

Electricity is a killer, make no mistake about that! Not only that, it can also cause serious burns and fibrillation of the heart muscles. A significant electrical shock may cause other injury, by throwing you off a ladder or scaffold or causing damage to internal organs.

It's not just people using electricity who are at risk; poor electrical installations and faulty electrical appliances can lead to fires causing significant property damage and could lead to fire related deaths or injuries.

Most of these incidents can be avoided by keeping electrical installations and portable equipment well maintained.

Understanding how electrical equipment is designed to be safe helps us to spot when things are wrong and therefore become dangerous.

Safe use of electrical equipment:

- Fuses – cut off the power supply if current exceeds a limit. It is essential that correctly rated fuses are used.
- Earth conductor – the earth wire acts as a conductor to the ground if equipment becomes live for any reason.
- Isolators – cut power off from all supply circuits so that fixed equipment can be maintained; some isolators can be locked in the off position. Make sure that portable equipment is unplugged before it is maintained.
- Reduced voltage (usually 110 volts or battery powered) – lessens the severity of any shock received; generally used on construction sites for portable tools and equipment, but of benefit in other situations. Using 110 volt equipment only reduces risk it doesn't eliminate risk.
- Residual current device (RCD) – may be a plug-in portable device or part of a fixed installation; isolates the supply to electrical equipment if it detects an earth current fault. RCDs offer a higher level of protection than fuses or circuit breakers.
- Double insulation - provides extra insulation and protection against shock; double insulated equipment does not need to be earthed.

Inspection and testing:

Fixed Electrical Installations - mains wiring, socket, distribution boards, lighting, etc:

- Installation must be installed to standards and maintained.
- Visual inspection to be carried out regularly.
- Formal testing—by competent person e.g. electrician.
- Frequency of testing and inspection varies for different types of installation.
- Records must be kept.

Portable Electrical Appliances - anything moveable with a plug, e.g. kettle, till, computer, pressure-washer, welder, grinder, drill:

- Equipment has to be well maintained by competent staff.
- Visual inspection undertaken regularly – this is the best way of detecting faults.

- Formal portable appliance testing – frequency depends on many factors, including age of equipment, how often it is used, type of equipment, where it is used, etc. It can be more than 1 year, it may be less.
- Important to keep records or mark equipment to show it has been tested.

What you need to

- ✓ Make sure you have been trained and are competent to use electrical work-equipment.
- ✓ Familiarise yourself with controls, emergency stop buttons and isolators.
- ✓ Check that portable electrical equipment has available inspection, test and maintenance information; this may be on the equipment or on a filed report.
- ✓ Check the equipment and power lead every day before use. If you can see damaged insulation or sheathing isolate the equipment and take immediate steps to report it to your manager or get it repaired by a competent person. For example, a flex pulling out of a plug top or a cable frayed or split showing the colours inside
- ✓ Make sure the cable is properly gripped by the plug, that there are no burn marks, and the plug is not cracked or, damaged; the connector pins must not be bent.
- ✓ Cables and leads should be in good condition, insulated, with no kinks or strain.
- ✓ Cables and leads should not have any signs of damage; no burn marks, overheating, exposed coloured or copper wires, damaged insulation, exposed conductors, brittleness or similar damage. There should be no taped joints and no taped up damage; cable connectors should be used.
- ✓ If you notice any faults or defects in portable appliance, remove equipment from use (either physically or by removing the plug) and report to your line manager immediately.
- ✓ Where we have provided a Residual Current Device (RCD) for you to use make sure that you always use it. Test it daily. Remember that a RCD does not prevent electric shock. It reduces the risk of a fatal electric shock but in damp or sweaty conditions the shock could still be severe. Do not be lulled into a false sense of security.
- ✓ Remember that only purpose designed electrical equipment can be used where there are risks of a flammable atmosphere or wet working conditions.
- ✓ Report any incident or injury to your supervisor or manager.
- ✗ Do not try to repair equipment yourself unless you have been trained and authorised and are competent.



Remember to always check equipment before use and if you spot any damage isolate it, do not use it and report the fault.

Discussion questions

If you see damage to a piece of electrical equipment what must you do?

Take it out of use, report it to your manager so that it can be repaired and replaced.

What should you do if the power supply to equipment you are using trips out?

There will be a reason for the equipment tripping out, don't be tempted to clear the fault and continue to use the equipment. Treat it as damaged.

Why should power tools never be lifted or pulled by the cable?

Because it is possible that the cables may be pulled out of place, the earth or neutral wires could contact the live supply and make the whole appliance live and a significant hazard.