

WHAT ARE THE RISKS FROM ELECTRICITY?

Harm can be caused to any person when they are exposed to 'live parts' that are either touched directly or indirectly by means of some conducting object or material.

Voltages over 50 volts AC or 120 volts DC are considered hazardous.

Electricity can kill. Each year about 1000 accidents at work involving electric shocks or burns are reported to the Health and Safety Executive (HSE). Around 30 of these are fatal, most of them arising from contact with overhead or underground power cables.

WHO IS MOST AT RISK FROM ELECTRICITY?

Anyone can be exposed to the dangers of electricity while at work and everyone should be made aware of the dangers.

Most electrical accidents occur because individuals:

- are working on or near equipment which is thought to be dead but which is, in fact, live
- misuse equipment or use electrical equipment which they know to be faulty.

LEGAL DUTIES AND OBLIGATIONS AROUND ELECTRICITY

As well as a moral duty on employers to protect employees and members of the public, General Health and Safety Legislation covers all employers and workplaces.

In addition, specific duties and obligations are laid out in the following regulations:

These regulations apply to all aspects of the use of electricity within the workplace from electrical supplies to the use of electrical equipment. They place a duty on employers, employees and the self-employed to:

- have the electrical systems constructed in a way that prevents danger
- maintain their electrical systems as necessary to prevent danger
- have work on, use of, or closure of, electrical systems carried out in a way that prevents danger.
- electrical equipment used in hazardous environments (e.g. extremes of weather, temperature, corrosive conditions) must be constructed or protected to prevent it becoming dangerous
- injury to staff due to an electric shock or electrical burn leading to unconsciousness or requiring resuscitation; or admittance to hospital must be reported.

THE RISKS FROM ELECTRICITY

Live parts

Normal mains voltage, 230 volts AC, can kill. Also, contact with live parts can cause shocks and burns.

Fire

Electrical faults can cause fires. This is particularly true where the equipment contains a heat source (e.g. heaters, including water heaters, washing machines, ovens, heat-seal packaging equipment).

Flammable or explosive atmospheres

Electricity can be a source of ignition in a potentially flammable or explosive atmosphere, e.g. in spray paint booths or around refuelling areas.

WHERE AND HOW ELECTRICITY IS USED

The risks from electricity are greatest in harsh conditions. In **wet conditions**,

unsuitable equipment can easily become live and can make its surroundings live. While **outdoors**, equipment may not only become wet but may be at greater risk of damage. In cramped or confined spaces with a lot of earthed metalwork, such as inside tanks, ducts and silos, if an electrical fault develops it can be very difficult to avoid a shock.

TYPES OF EQUIPMENT IN USE

Some items of equipment can also involve greater risk than others. **Extension leads** are particularly liable to damage to their plugs and sockets, cables, and electrical connections

BASIC ELECTRICAL SAFETY:

Mains supplies

- install new electrical systems to BS 7671 Requirements for Electrical Installations
- maintain all electrical installations in good working order
- provide enough socket-outlets for equipment in use
- avoid overloading socket-outlets – using adaptors can cause fires

Use the right equipment

- choose electrical equipment that is suitable for its working environment
- ensure that equipment is safe when supplied and maintain it in a safe condition
- electrical equipment used in flammable/explosive atmospheres should be designed not to produce sparks. Seek specialist advice when choosing this type of equipment.

Maintenance and repairs

- ensure equipment is fitted with the correctly rated fuse.
- ensure cable ends always have their outer sheaths firmly clamped to stop wires working loose from plugs or inside equipment
- make sure all wires are connected securely if the 13A plug is not a moulded-on type.

GOOD PRACTICES:

Use other forms of power where possible: Electrical risks can sometimes be eliminated by using air, hydraulic or hand-powered tools.

Reduce the voltage: Using lower voltages can reduce or eliminate the risks of electric shocks and burns:.

Use Residual Current Devices (RCDs) for extra safety: An RCD can provide additional safety. An RCD detects some faults in the electrical system and rapidly switches off the supply.

MAINTAINING ELECTRICAL EQUIPMENT AND INSTALLATIONS.

If a fault is identified, the item should be removed from use and repaired before being used again. Staff should be trained to carry out these simple visual checks.

There should also be a system where formal visual inspections are carried out the legislation requires employers to decide on the frequency of testing based on their risk assessment.

WORK SAFELY

Make sure that:

- suspect or faulty equipment is taken out of use immediately
- people working with electricity are competent to do the job.
- suspect or faulty equipment is kept secure until examined by a competent person
- tools and power socket-outlets are switched off before plugging in or unplugging
- equipment is switched off and/or unplugged before cleaning or making adjustments
- where possible, all electrical appliances are switched off at the mains at the end of the working day.

References:

<http://www.s-cool.co.uk/gcse/physics/static-and-current-electricity/electricity-at-home.html>

http://en.wikipedia.org/wiki/Electric_shock