Electrical Safety

Compliance Code

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1.0 Introduction

On average, around 1,000 electrical accidents at work are reported to HSE each year and about 30 people die of their injuries.

The main hazards are:

- Contact with live parts causing shock and burns (normal mains voltage, 230 volts AC, can kill)
- Faults or misuse which could cause fires
- Fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere

Even non-fatal shocks can cause severe and permanent injury. Shocks from faulty equipment may lead to falls from ladders, scaffolds or other work platforms.

Those using electricity may not be the only ones at risk: poor electrical installations, faulty electrical appliances or misuse of equipment can lead to fires which may also cause death or injury to others. Most of these accidents can be avoided by careful planning and straightforward precautions.

2.0 Electricity at work Regulations (EAW) 1989

The EAW regulations state that employers have a responsibility to ensure that any electrical equipment that has the potential to cause injury or harm is maintained in a safe condition.

Within an educational setting this would include the following

1. Fixed Electrical installations

   Includes all fixed electrical equipment that is supplied through an electricity meter. It comprises cables, accessories (like sockets, switches and light fittings), Distribution boards, circuit breakers and residual current devices (RCDs).

2. Portable Appliances

   Includes all equipment and appliances that are connected to the electricity supply via a plug, whether this be a standard 3 pin plug or an industrial connection.

3.0 Testing requirements & records

<u>Fixed Electrical</u>

Fixed electrical installations should be tested by a qualified and experienced electrical engineer every 5 years. Where remedial work is identified this should be addressed to ensure a SATISFACTORY Electrical Installation Condition Report (EICR) is held.

<u>Portable Appliance Testing (PAT)</u>

For portable appliances the focus should be on pre use checks and regular inspections to identify potential faults before use and this should form part of the normal safety instructions for students. Damage equipment should be removed from use and either repaired or replaced.

There is no legal requirement to carry out official testing, however, to meet the requirements of the EAW regulations it is highly recommended that testing should be conducted using a risk based approach as follows

1. High use items - Where it is identified that portable appliances are in high use or regularly relocated (plug in and unplugged) the testing should be conducted every year as a minimum.
2. Medium use items - For items identified as medium use the testing should be conducted every 3 years as a minimum.
3. Low use items - For items identified as low use, such as IT Equipment, the testing should be conducted every 5 years as a minimum.

New fixed installations

When a new fixed installation has been installed a Minor Electrical Installation Works Certificate (MEIWC) must be issued and recorded. Work on fixed installation must only be carried out by a qualified and registered electrical engineer.

New portable appliances and equipment

Before purchasing portable appliances schools should check that each appliance at least has the CE Mark, which is the product manufacturer's claim that it meets all the requirements of European Legislation.

It is also recommend that appliances also display additional safety marks, such as the British Standard Kitemark or the 'BEAB Approved' mark (which indicate that the equipment has been assessed by an independent body as meeting with the relevant product standard) are purchased as these tend to provide greater assurance of electrical safety.

4.0 Use of personal equipment

Staff should refrain from using personal equipment on school sites. This includes, but is not limited to, items such as

- Kettles
- Toasters
- Electrical heaters
- Extension leads
- Personal device chargers

If personal equipment is required then approval should be sought from the head or site manager, who should ensure the equipment meets the requirements of this compliance code.

5.0 Use of extension leads

School sites consist of buildings of varying age and design and as such may not lend themselves to the requirements for modern teaching and learning practices. The use of IT, interactive boards, performance equipment, cleaning appliances etc place a higher demand on electrical outlets.

As such it is inevitable that extension leads will be required to allow the use of numerous types of equipment at one time. Therefore safety considerations must be taken into account.

1. Extension leads should be of a sufficient length to meet the requirement.

   Extension leads should be fully extended when in use to reduce the potential of heat build up. As such if there is a need to use a 5 m extension lead then a 10 m lead should not be used as this can produce excessive cable and increase the risk of trips. Additionally short extension leads

should never be joined together (Daisy chained) to meet the requirement due to an increased risk of overload and fire.

2. Extension leads should be purchased from a reputable source

   Extension leads should display that they have been manufactured and tested in line with European or British standards

3. Extension leads should be used as a temporary provision

   Where there are insufficient outlets the need to install additional provision should be included as part of any site improvement project.

4. Extension leads can pose a trip hazard

   Cables extended across pathways, corridors, stairs etc. are to be routed and protected to ensure trip hazards are not created. Leads should be used for the minimum time required and stored in a safe manner when not required.

5. Extension leads must not be overloaded

   Plugs in the UK are generally fitted with either a 3 AMP or 13 AMP fuse. A 3 AMP fuse is used for appliances that use up to 700 Watts of power and a 13 AMP fuse is used for appliances that exceed 700 Watts.

Appliances protected by a 3A fuse
Lamp
Television
DVD player
Computer
Fridge
Freezer
Radio
Power drill

Appliances protected by a 13A fuse
Washing machine
Kettle
Toaster
Iron
Dishwasher
Microwave
Hair Dryer
Vacuum cleaner

Most UK extension leads have a maximum capacity of 13A, therefore it is important to remember not to exceed this amount with the electrical products being plugged into the extension socket. Broadly speaking, nothing in the right hand column of the table should be used in conjunction with anything else in an extension lead.

6. Extension leads must not be linked together (Daisy chained)

   An extension lead designed to extend to 50 metres will be designed to account for the increased resistance caused by the length of the lead through the use of thicker internal cables. Whereas a shorter extension lead will have thinner internal cables with a higher resistance.

   It can therefore be seen that if short extension leads are linked together the overall resistance in the total length would be increased when compared to the correct length lead. There would also be an increase in resistance due to imperfections at the connection points..

   An increase in resistance means that the appliance connected to the extension lead will attempt to draw more current to ensure it can operate correctly. If this draw exceeds the AMP rating of the cable it can lead to overheating and melting of the plug attached to the outlet leading to a potential fire risk.