STOP AND THINK TALK

A briefing tool for managers

Working Safely with Electricity

Electricity kills and injures people. Around 1000 electrical accidents at work are reported to HSE each year and about 25 people die of their injuries. Incidents occur through the use of poorly maintained electrical equipment; work near overhead power lines; contact with underground power cables during excavation work; mains electricity supplies (230 volt); use of unsuitable electrical equipment in explosive areas such as confined spaces.
Fires started by poor electrical installations and faulty electrical appliances cause many additional deaths and injuries.

FIRE CAUSED BY DAMAGED ELECTRICAL WIRING

A fire started in a plant control room causing damage. The cause of the fire was thought to be rodent infestation and the animals chewing through electrical cables.

ENGINEER SUFFERS SEVERE BURNS TO ARM AFTER CONTACT WITH ELECTRICITY

An Engineer received burns to his hands, arm and face and required hospital treatment. The Engineer was inserting fuses into an electrical circuit and on inserting the second fuse there was an explosion. The complexity of the circuitry led the Engineer to believe the equipment was isolated but it still had power.

ELECTRICIAN SUFFERS FROM BURNS IN ELECTRICAL EXPLOSION

An electrician suffered a severe burn to his forearm as he was attempting to disconnect a 3 Phase, 415 volt cable. Having identified the correct panel he turned the “local” isolation switch to OFF and opened the cabinet door. He removed three x 100amp fuses then tested the fuse holder to ensure it was isolated. At this point he was distracted when a colleague asked him a question. When he returned to the panel he suffered a lapse of concentration and, instead of undoing the three cables he had isolated, he mistakenly disconnected the three cables on the live side of the isolation switch instead. When one of these cables touched the side of the panel an electrical short circuit occurred. The resulting explosion blew several holes in the cabinet and caused burns to the electrician’s arm. The electrician was fortunate that he did not come into direct contact with the cables as this could have been life threatening.

Panel after short circuit

New panel with IP2X protection

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Preparation

This stop and think talk can be used individually or with a group of people. It could be delivered in the workplace, perhaps a control room or a location where the necessary controls can be demonstrated. Take care that the area is suitable for people to hear and see what you are doing if you are carrying out a practical demonstration. Participants should receive a copy of the talk for their CPD files as well as signing the training declaration. ***Note: This SATT is to raise awareness of electrical issues, it is not intended as formal training for carrying out any electrical work***

Introduction (After reading out the case studies)

Electricity kills and maims, any work on electrical equipment should only be carried out by a competent person. Use of electrical equipment will be safe if it is designed and maintained properly. A few simple precautions should be taken such as a brief visual check prior to use, ensuring that all plugs and cables are in good condition.

THE TALK

Use the questions below to open the discussion under each heading and then go through the lists explaining in detail each hazard / control and what is expected

Hazards & RISKS

Question 1 – What are the Hazards of Electricity?

Electrocution
Fire
Explosion

Question 2 – Where are the Risks from Electricity? Who is at Risk?

Coming into contact with live wires/connections
Electricians during maintenance
Anyone carrying out excavation work
Anyone close to defective equipment
Arcing from high voltage cables

Question 3 – What precautions can users of electrical equipment take?

Many faults with work equipment can be found during a simple visual inspection:
Switch off and unplug the equipment before you start any checks.
Ensure the fuse is correctly rated by checking the equipment rating plate or instruction book.
Check that the plug is not damaged and that the cable is properly secured with no internal wires visible.
Check the electrical cable is not damaged and has not been repaired with insulating tape or an unsuitable connector. Damaged cable should be replaced with a new cable by a competent person.
Check that the outer cover of the equipment is not damaged in a way that will give rise to electrical or mechanical hazards.
Check for burn marks or staining that suggests the equipment is overheating.
Position any trailing wires so that they are not a trip hazard and are less likely to get damaged.
If you are concerned about the safety of any Equipment you should stop it from being used and ask a competent person to undertake a more thorough check.

Controls

Question 4 – How do we control work with Electricity?

Only competent and authorised personnel are allowed to work on electrical equipment
All sources of electrical power are isolated prior to work Commencing (Live electrical working/testing is occasionally required and is carried out under strict controls, this a specialist area requiring specific training and qualifications)
Electrical control panels are locked and access restricted to authorised personnel only. Where access is required to reset switches the panels are designed so no live parts can be touched (known as IP2X standard)
Permits to Work are issued for work on electrical Systems
Prior to excavation work cable scanners are used to verify, in conjunction with services drawings, the location of Cables, pipes etc. Hand digging and careful excavation Techniques are employed to prevent damage to any cables

Emergency Preparation

Question 5 – What protective equipment/procedures would you need?

Electricians working on systems have specialist equipment including devices for testing for current/live elements, insulated tools etc.

AND FINALLY . . .

- Clarify any points as required.
- Ask if there are any other safety related issues that should be discussed.
- Get everyone to sign the training declaration.
- Thank everyone for their participation.

STOP AND THINK TALK

Working Safely with Electricity – Training Record

The people listed below have received instruction in **Working Safely with Electricity** as detailed on the previous pages. By signing below they are confirming that they understand the safe systems of working discussed and will adhere to these in the workplace.

Date	Name	Signature	Instructed by