

# **CITY AND COUNCIL OF CARDIFF**

## **CODE OF GUIDANCE**

### **PORTABLE ELECTRICAL EQUIPMENT**

This Code of Guidance outlines the safe use of electrical equipment and explains the requirements of Regulation 4(2) of the Electricity at Work Regulations 1989 which state 'As may be necessary to prevent danger, all systems shall be maintained so as to prevent, so far as is reasonably practicable, such danger'.

- 1.0 Definition of portable electrical equipment
- 2.0 Causes of accidents
- 3.0 Safe selection and use of electrical equipment
- 4.0 Visual inspection by user
- 5.0 Testing and required documentation
- 6.0 Frequency of testing
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#### **1.0 Definition of portable electrical equipment**

1.1 Portable electrical equipment is, generally, equipment that has a lead (cable) and plug and which is normally moved around or easily moved from place to place, e.g. vacuum cleaners, kettles, heaters, fans, televisions and desk lamps. It is also equipment that could be moved, e.g. photocopiers, fax machines, desktop computers and kitchen equipment. Equipment that is moved often is more likely to be damaged.

#### **2.0 Causes of accidents**

2.1 There are a number of reasons why accidents may occur with electrical equipment

- Equipment unsuitable for the task
- Misuse of equipment
- The conditions may not be suitable for use (e.g. example if used in wet conditions when equipment is not suitable for this task)
- Equipment may be poorly maintained
- Equipment may be defective
- Equipment may be damaged

2.2 Cabling and plugs are subject to wear and damage, particularly when they are not stored or used properly. Overextension (stretching or by pulling or tripping over) of a cable is likely to loosen the electrical connection either in the plug or in the equipment, and cause arcing and overheating. Where live or earth wiring

is pulled completely from the terminal this may result in the equipment becoming 'live' causing electrocution.

- 2.3 Cables can be damaged exposing live wiring if they are
- 'Pinched' under floor box covers, under or behind heavy equipment, in door jambs, or behind metal tables or work surfaces
  - Run over by vehicles, trolleys or computer chairs
  - Dragged over sharp or abrasive surfaces
  - Come into contact with moving parts of machinery
  - Come into contact with hot surfaces or chemicals
  - Are in contact with petrol, oil or solvents
- 2.4 Overheating of equipment through damage, misuse, faulty manufacture or age related deterioration of insulation can cause fire or allow live terminals to be exposed.
- 2.5 Carrying out repairs or servicing of equipment without disconnecting the electrical supply can cause electrocution, and equipment with internal capacitors e.g. computers and monitors must only be serviced, maintained and electrically tested by a competent person.
- 2.6 Hand held tools such as drills etc. present an increased hazard because in normal use the operator's hand is tightly gripped on the equipment making it difficult to release when receiving an electric shock.

### **3.0 Safe selection and use of electrical equipment**

- 3.1 To reduce the risk of accidents and fire from electrical equipment there is a need for both a **visual inspection prior to use by any user** of the equipment; and a **periodic inspection by a competent person** who will undertake technical testing for the loss of earth continuity or breakdown of insulation which will not be visually evident.
- 3.2 Electrical equipment must be properly selected for the task to be performed, and for the conditions in which the task will be carried out. There may be a need for low voltage equipment (i.e. 110 volts or less), cordless equipment, double insulated equipment, or for equipment that can be used in explosive atmospheres.
- 3.3 Residual current devices (RCD's) are safety devices designed to 'trip out' or cut off electrical supply in a fraction of a second when an unusual flow of electricity in a circuit is detected (as would occur in a dangerous fault situation). It does not provide total prevention of an electric shock, but limits the time and extent

of it, so all normal precautions must still be taken. Use is necessary in situations where mains equipment is being used outdoors (e.g. electric mowers) and in other higher risk situations, e.g. Home Carers should have RCDs to use when working in the community. It is important that the manufacturer's instructions for operating and testing are followed each time it is used.

3.4 All electrical equipment must be used in accordance with the manufacturer's instructions, used and stored with care.

3.5 Many precautions are common sense

- Employees should be trained in the use of the equipment if appropriate
- Switch should be set to the off position before plugging in
- Equipment must not be splashed with water or chemicals, or used with wet hands
- Appliances must be switched off and unplugged before any adjustments or blockages are cleared
- Equipment should not be left unattended where people are likely to trip or stumble over it
- Appliances should be switched off after use
- Electrical leads must not be used to pull, lift or drag the appliance
- Take care that electrical leads do not become a tripping hazard,. Cable covers are available from Procurement and Supplies.
- Equipment and extension leads must not become jammed in doors, pulled tight around corners, make contact with hot surfaces or subject to any other damage. Plugs should fit easily into sockets without stretching the cabling.
- Drum type extensions should be fully unspooled before use – heat generated within coils of cabling in the drum can melt the insulation covering and drum.
- Ventilation to electrical equipment must not be restricted and allow generated heat to dissipate.
- Appliances must be safely stored, with cabling coiled to prevent damage to plug without stretching or twisting the cable.
- Extension leads should only be used where absolutely necessary. There should be one extension lead only per socket (i.e. no 'piggybacking' of extension cables and sockets). Extension cables that trail across walkways must be covered with cable covering.
- Do not use multi socket adaptors (double/triple sockets). They can lead to overloading of circuits and cause fires.

#### **4.0 Visual inspection by user**

4.1 Before portable electrical equipment is used a visual inspection should be made for:

- Damage to cabling, such as splits, cuts or abrasions
- Coloured inner cable cores must not be showing
- No insulation tape cable joint or repair
- Plug must not be damaged (cracked or broken casing or bent pins) and must be firmly screwed together (top of plug should not move)
- Outer sheath of cable must be firmly gripped where it enters plug, and coloured insulation sheaths not visible.
- Appliances/equipment should not be damaged allowing access to electrical conductors.
- No contamination or marking from water or chemical damage (discolouration, water marking)
- No evidence of overheating to equipment, cable or plug (brown or cream scorch marks, brittle or flaking plastic, 'bubbled' paintwork or distorted metal.
- In use, if there is a smell of burning plastic, arcing (flashing at the plug or equipment, with an audible click) or the equipment works intermittently, this is an indication of faulty equipment.

**If any of the above are seen, the equipment must not be used, attach a notice DO NOT USE - ELECTRICAL FAULT, or remove the plug. The equipment must be put out of use and reported to the line manager.**

## 5.0 Testing and documentation

- 5.1 To ensure that all equipment has been inspected and tested there must be a register of equipment for each office/room/building as appropriate. New equipment will need to be added to this list when acquired, and discarded equipment crossed through. The register should include stored equipment (e.g. Christmas lights, fans and heaters which may be stored in cupboards at the time of inspection.
- 5.2 All equipment that has been tested should be labelled with the test date. New equipment purchased between test schedules should be labelled with the date it was acquired/brought into use.
- 5.3 Personal electrical equipment should not be brought into work. If there is a justifiable need for electrical appliances to be brought in by an individual (work equipment should be supplied by the employer) this must be agreed in writing with the line manager and the equipment must be subject to portable appliance testing **before use**.
- 5.4 Testing of electrical appliances must be undertaken by a competent person. Competency is defined as having the appropriate knowledge, skills and training, and there is a need for specialist testing equipment. Portable appliance testing (PAT Testing) can be arranged through Direct Services, Services Manager, on 029 2078 8252.

5.5 Repairs **must** be undertaken by a trained electrician.

## 6.0 Frequency of testing

6.1 The frequency of testing will be subject to risk assessment – equipment that is in use for building maintenance, vehicle repair or used outdoors in adverse weather conditions will require more frequent testing than that in offices.

6.2 Guidance on the frequency of testing for office and other low risk environments has been issued by the Health and Safety Executive, and is included below.

Equipment	User Checks	Visual Inspection	Combined inspection and testing
Battery operated (less than 20 volts)	No	No	No
Extra low voltage: (less than 50 volts AC) telephone equipment, low voltage desk lights	No	No	No
IT equipment: e.g. desk top computers, DSE screens	No	Yes Every 2 – 4 years	No if double insulated Otherwise up to 5 years
Photocopiers, fax machines:  NOT hand held  Rarely moved	No	Yes Every 2 – 4 years	No if double insulated Otherwise up to 5 years
Double insulated equipment: NOT hand held.  Moved occasionally e.g. fans, table lamps, projectors	No	Yes Every 2 – 4 years	No
Double insulated equipment HAND HELD e.g. some floor cleaners	Yes	Yes Every 6 months 1 year	No
Earthed equipment (Class 1) : e.g. electric kettles, some floor cleaners	Yes	Yes Every 6 months – 1 year	Yes Every 1 – 2 years
Cables (leads) and plugs connected to the above.  Extension leads (mains voltage)	Yes	Yes Every 6 months - 4 years depending on the type of equipment it is connected to	Yes Every 1 – 5 years Depending on the type of equipment connected to
Hand tools	Yes	Before Use	Every 3 months

6.4 In addition to routine inspection and testing, further tests must be carried out where there is any reason to suspect the equipment maybe faulty. The equipment must not be used until it is certified to be safe.

## **7.0 Further information**

Health and Safety Advisers, Corporate Services, 029 2087 2635

Andrew Gibbs, Services Manager, Direct Services, 029 2078 8252

Health and Safety Executive website ([www.hse.gov.uk](http://www.hse.gov.uk))

INDG236 - Maintaining portable electrical equipment in offices and other low risk environments

HSG107 – Maintaining portable and transportable electrical equipment