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TECHNICAL & PROPERTY SERVICES HEALTH & SAFETY GUIDANCE NOTE: **HSGN 1**

PAT Testing

February 2015

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1. Objective

The objective of this Guidance Note is to provide guidance on the use of Portable Electrical Appliances in the University in accordance with the Electricity at Work Regulations 1989 and its Approved Code of Practice, Health and Safety Executive Guidance, and the Institution of Electrical Engineers (IEE) Guidance.

2. Background

Electricity can kill. 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 appliances can lead to fires, which may also cause death or injury to others. Careful planning and straightforward precautions can avoid most of these accidents.

3. Definitions

3.1 Electrical Appliance
An appliance or a device that uses electric energy.

3.2 Portable Appliance
All equipment that is intended to be connected to a fixed installation or generator by means of a flexible cable and plug, the appliance is normally moved around or can easily be moved from place to place. This includes equipment that is either hand-held or hand-operated while connected to the supply e.g. vacuum cleaners, kettles, heaters, fans, televisions and desk lamps, and also equipment that can be moved e.g. desktop computers, photocopiers and fax machines.

3.3 Distribution System
All systems designed for the transport of electrical energy to a point of use or connection to the user's appliances regardless of source, strength, or potential of the system.

3.4 Competent Person
A person that has the necessary knowledge, experience and qualifications to enable them to correctly understand the hazards associated with portable electrical equipment and electricity supplies.

4. Roles and Responsibilities

4.1 The **Senior Management Team** drives and guides the effective implementation of the policy as senior executive officers;

4.2 **Heads of Unit / Schools** must cooperate with University policies and ensure that staff under their management, comply with University policies and stay abreast of any changes. Heads of Unit are also responsible for helping to compile and maintain a list of portable appliances in their work areas.

4.3 The **Head of Property and Technical Services** coordinates activates between the Campus Managers at each site.

4.4 The **Health and Safety Manager** coordinates the operation of health and safety across the University and is responsible for supporting staff in their duties.

4.5 **Campus Managers** should coordinate with other staff to ensure that portable electrical equipment in tested to the frequencies outlined in this policy.

4.6 **ALL University Staff**:

- Staff should always act in a responsible way, in particular paying attention not to undertake any actions that constitute a danger to themselves or others.
- Cooperate with the University and support its policies and procedures on health and safety
- Bring to the attention of managers any situation or practice that may lead to injuries or work related ill-health
- Carry out a user-check before using Portable Electrical Equipment (see Appendix 2)
- Use equipment in a safe way, according to any relevant training
- Maintain good housekeeping in work areas
- Report any faulty equipment to the relevant Campus Manager

5 Portable Electrical Equipment Safety Information

5.1 Purchase
All newly acquired portable appliances must be marked with the symbol of, and/or have a certificate of approval in accordance with, the current British or European Union standard. Purchasers are strongly advised to quote this requirement on all orders.

5.2 Modification/Repair
Any alteration, modification or repair must be carried out by a competent person and pass all the appropriate testing requirements in Appendix 1 before use.

5.3 'Home Made' Appliances
Any equipment produced "in house" must satisfy all the criteria required for approval by the appropriate British/European Standard and be tested by a competent person before use.

5.4 Testing of Portable Appliances (includes fixed appliances, refer to Appendix 1)
(a) All portable appliances should be tested or inspected in accordance with Appendix 1 or a written test procedure for non-standard equipment where the tests outlined are inappropriate.

(b) Procedure for testing is as follows:
i) Each School / Unit is to create an inventory of portable appliances owned or used.
ii) A competent person should decide the frequency of tests/inspections for each class or group of appliances, as outlined in Appendix 1 of this document.
iii) Tests/inspections should be carried out by a competent person as appropriate.
iv) School/Support Units Health, with the necessary support, will create and maintain a digital record capable of:

a. Identifying each appliance and showing the frequency of test/ inspection;
b. Recording the test result, and marking the appliance;
c. Programming the next test;
d. Identifying safe and unsafe appliances.

Appendix 1

Guidance on tests and inspections and their frequency (extract from Health and Safety Executive Guidance HS(G)107 Maintaining Portable and Transportable Electrical Equipment)
Appendix 1 sets out the suggested frequency of formal visual inspections and combined inspections and electrical tests for portable and transportable electrical equipment.

It is up to the duty holder, with appropriate advice where necessary, to assess the conditions affecting equipment, which may lead to potential damage and/or deterioration and should determine the maintenance regime.

Note: the test of equipment supplied under contract such as photocopiers and vending machines are to be specified as the responsibility of the provider in the drawing up of contracts. The School/Service negotiating such contracts will be responsible for this being carried out.

Type of Equipment	**User Checks**	**Formal Visual Inspection**	**Combined Inspection and Test**
Equipment Hire	N/A	Before issue / after return	Before Issue
Office Information technology, e.g. desktop computers, fax machines, photocopiers	No	1 – 2 years	None if double-insulated, otherwise up to 5 years
Double-insulated equipment not hand-held, e.g. fans, table lamps	No	2 – 3 years	No
Hand-held, double insulated (class II) equipment, e.g. some floor cleaners, kitchen equipment and irons	Yes	6 months – 1 year	No
Earthed (class I) equipment, e.g. electric kettles, some floor cleaners	Yes	6 months – 1 year	1 – 2 years
Cable and plugs, extension leads	Yes	1 year	2 years

Appendix 2: User checks

All users of portable electrical equipment should carry out a ‘user check’ prior to operating the equipment. No formal training is required, however, the checks should include:

Inspect outside of plug for damage.

Inspect the cable for damage.

Ensure no taped or inappropriate joints.

Inspect for signs of overheating.

Inspect for obvious damage to the cover(s) of the equipment.

If any signs of damage are found, the equipment must not be used. These simple user checks do not need to be recorded.

Appendix 3: Formal visual inspection (recorded)

Formal visual inspection of portable electrical equipment is relatively straightforward, and will identify most electrical faults. Staff trained with basic electrical knowledge may carry this out. In addition to the basic User Checks, (Appendix 2), formal visual inspection should ensure:

- the equipment is being used in accordance with the manufacturer's instructions;
- the equipment is suitable for the job;
- there has not been any change of circumstance; and
- the user has no related concerns with the equipment.

Formal visual inspection includes checks carried out by the user and, where possible, will include removing the plug cover and checking internally that:

- there are no signs of internal damage, overheating or water damage to the plug;
- the correct fuse is in use, (not a piece of wire, etc.);
- all wires, particularly the earth where fitted, are attached to the correct terminals;
- all terminal screws are tight;
- the cord grip is securing the outer part, (sheath), of the cable tightly; and
- no bare wire is visible other than at the terminals.

(N.B. Moulded plugs are permanently sealed in manufacture, and are not designed to open).
The formal visual inspection process is:

Appendix 4*:* Combined inspection and test, (recorded)

Persons required carrying out combined inspection and testing must be competent to do so. Appropriate training to safely undertake University PAT is available via OSHEU. Whilst *visual inspection* identifies most safety related issues, when combined with formal testing, hidden faults are identified, (i.e. using calibrated test equipment). Combined inspection and test therefore comprises the following:

A formal visual inspection (Appendix 3), to identify any obvious equipment faults.

Identify the class of electrical appliance (Class I, II or III).

Earth Continuity, (if appropriate).

Class I equipment requires an effective, low resistance earth path from the earth pin in the mains plug of the equipment, along the power supply cord, to the equipment casing. If that earth connection fails, and an electrical fault develops within the equipment, persons touching it may receive an electric shock. Insulation resistance, (if appropriate).

For Class I and Class II equipment, the Insulation Resistance test identifies any breakdown of insulation between the protective earth, and live and neutral parts of the equipment and its lead.
Test the equipment operation, if safe to do so.
Equipment successfully passing the above would receive a Pass label, and be returned to use.
Fail: label, disable, and remove from use.

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