 NUS National University of Singapore	NUS Safety & Health Guidelines		Procedure No:	OSHE/SOP/GL/10
	Electrical Safety in the Laboratory		Revision No:	000
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Prepared By:		Approved By	Review Date	
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1.0 OBJECTIVE

The purpose of this procedure is to provide all personnel working in the laboratory with the necessary knowledge to enable them to work safely with any electrical equipment, apparatus or device used in the laboratory.

2.0 SCOPE

This SOP is applicable to all laboratories in NUS.

3.0 RESPONSIBILITIES

Principal Investigators (PI) and Heads of Department (HOD) shall be responsible for ensuring that this SOP is disseminated to all laboratory staff, students and any person working for one way or another for the faculty.

4.0 DEFINITION

Authorised person: licensed electrical worker

Safety Authority: The authority in Singapore administering the Consumer Protection (Safety Requirements) Registration Scheme (CPS Scheme).


5.0 PROCEDURES

5.1 Installation and repair of equipment

- a. No one other than the authorized person is allowed to carry out any electrical installation and maintenance where there is a possibility of getting into contact with live wiring or terminal.
- b. Faulty electrical equipment or apparatus must be reported to the PI immediately. The PI shall then tag it with a "DANGER - DO NOT USE" tag and then make the necessary arrangement for repair to be carried out.

5.2 Usage of electrical apparatus

- a. All electrical equipment and apparatus to be used in the laboratory shall meet local safety standards and regulations e.g. Safety Mark.
- b. Staff shall consider electrical loading of equipment prior to purchasing and installation.

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- c. Use electrical equipment and apparatus in accordance with the manufacturer's operating instructions.
- d. Never handle or use any electrical equipment with wet hands.

5.3 Electrical Components

5.3.1 Plug

- a. Do not use any plug that has not been approved by the Safety Authority
- b. When inserted into a socket, make sure that it is fully inserted.
- c. All broken or damaged plugs are to be removed immediately.
- d. Always switch off the electricity supply before taking out the plug from the socket.

5.3.2 Socket


- a. All sockets are to be firmly mounted onto the wall or mounting location.
- b. Broken sockets are to be replaced immediately.
- c. Do not overload any electrical socket by connecting several appliances using multiple socket accessories.

5.3.3 Electrical cords

- a. Electrical cords should be maintained in good condition.
- b. All frayed cords are to be removed immediately. They could cause fire to start or even cause electrocution of personnel who happened to get into direct contact with the exposed wires.
- c. Do not allow any cord to be laid along the floor where people need to walk across.
- d. When connected to a plug, the electrical cord is to be firmly held by the cord gripper.
- e. Do not use extension cord where permanent wiring should be installed.

5.3.4 Electrical wiring

- a. Take note of the colour code used for electrical wiring:
 - Live wire – brown
 - Neutral – blue
 - Earth - green / yellow.

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- b. Do not use any undersized or oversized wire.
- c. Joining of wires using adhesive tapes is not permitted – use proper connectors.

5.3.5 Fuse

- a. Select the right size fuse
- b. Do not use a wire as an improvised fuse.

5.3.6 Grounding

Grounding shall be carried out for any electrical equipment that needs to be grounded.

5.4 Electrical Switchboard

5.4.1 Main panel

- a. Do not open up the cover of the main panel if you do not have the authority to do so.
- b. Do not place any item that can obstruct accessibility to the front opening of the electrical panel.

5.5 General

5.5.1 Distribution Board (DB).

- a. Do not open up the cover of the main panel if you do not have the authority to do so.
- b. Do not place any item that can obstruct accessibility to the front opening of the electrical panel.

5.5.2 Switch off appliances when not in use


With the exception of those indicated by a notice that read “Do not switch off – equipment needs to be switched on all the time”, all electrical equipment and apparatus are to be switched off when not in use.

5.5.3 Warning Signs

Proper warning signs shall be used whenever there is a need to alert personnel working in the laboratory about electrical hazards that may be present.

5.5.4 Incident Reporting

All incidents involving electrical energy are to be reported to the PI who will then fill in an “Incident Reporting Form” and submit it to the Safety & Health Officer for further processing.

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5.7 Mandatory Training pertaining to lockout procedures

Training shall be conducted for the following two categories of personnel (including contract personnel) in the laboratory:

- a. *Persons who have to carry out the inspection, cleaning, repair, or maintenance of plant, machinery, or equipment*

Training will cover the skills to identify the energy sources and safely isolate them; to correctly apply lock-out devices; and to verify the shutdown. Re-training shall be carried out to keep the laboratory personnel updated on any new hazards or change in the lock-out procedures. Records of the names of the persons trained or re-trained, and the contents of the training and re-training should be kept after such training or re-training.

- b. *Persons who are not involved in inspection, cleaning, repair, or maintenance of plant, machinery, or equipment.*

Training to understand the purpose of the lock-out procedures and the prohibition to restart or re-energize any plant, machinery, or equipment that is locked out. Records of this training shall be kept following the end of the training.

Personnel will be advised of disciplinary measures for violating the lock-out procedures; they shall sign a form acknowledging that they have been briefed adequately.

The Safety & Health Officer shall conduct the training for both personnel described in a) and b).

6. RECORDS

Records shall be maintained for all trainings conducted. A copy of the training record is to be submitted to Office of Human Resources (OHR).

7. REFERENCES

Nil

8. APPENDICES

Nil