Safety Alert – May 2023

Subject: Electrical shock incidents, "Test for Dead protocols" and need to seek medical assessment

Background:

In the last two weeks UNSW has seen two electric shock events where staff and students were working around live electrical circuits. Work with electrical equipment needs to be highly controlled and managed appropriately.

The Work Health and Safety Regulations (WHS Regulations) prohibit work on energised (live) electrical equipment including UNSW laboratories. While activities may not be on energised equipment, all equipment must be managed as though they are live until proven otherwise.

How to manage electrical equipment to ensure safe use:

All individuals must ensure that all electrical work (including repair and maintenance work) is not carried out on energised electrical equipment. Ensuring that all equipment is de-energised eliminates significant electrical risks. The following are the key steps for an effective isolation of electrical supply.

- **Consultation:** consult with the person who manages or controls the activities (e.g., in relation to the timing and approval of the work) and notify any other affected people where appropriate.
- **Isolation:**
  - each exposed part is to be treated as energised until it is isolated and determined not to be energised,
  - disconnect active conductors from the relevant source(s), noting there may be multiple sources, and stand-by systems/generators/photovoltaic systems as well as auxiliary supplies from other boards,
  - if a removable or rack out circuit breaker or combined fuse switch is used, it should be racked out or removed then locked open and danger tagged,
  - each high-voltage exposed part must be earthed after proven de-energised.
- **Securing the isolation:** lock the isolating switch(es) or remove and tie back relevant conductors to protect the people carrying out the electrical work.
- **Tagging:** tag the switching points where possible to provide general information to people at the workplace.
- **Testing:** test to confirm the relevant circuits have been de-energised along with any other relevant conductors in the work area, and re-test as necessary.
- **Use of correct tools:** Ensure that all tools are appropriate for the task. This includes non-conductive tools.
- **Use of Residual Current Devices (RCDs):** Ensure that the room in which the activity is taking place is fitted with an RCD. RCD should be tested prior to activity (they are fitted with self-test mechanism) and maintain every three months. Check for a test tag before commencing activity.

All unattended research is to have "unattended research" notice to ensure that emergency contact can be made at all times.

“Test for dead” protocols:

The safe protocol of 'Test for 'dead' before you touch’ must be applied at all times. This test requires the tester of a known live source, to test the equipment to be worked on, and then confirm the tester is still functional by retesting the tester on a known live source. Panel voltmeters should not be used as the only method of determining whether an electrical part is de-energised.

If there are any exposed conductors in the immediate work area they should be separated by design or segregated and protected with insulated barricades, insulated shrouding or insulated material to prevent against inadvertent or direct contact.

If voltage testers are used, they should be tested for correct operation immediately before use and again after use to confirm that the instrument is still working. This check should be considered to be part of the ‘TEST FOR ‘DEAD’ BEFORE YOU TOUCH’ safe work principle.

It is vital workers understand the importance of taking the time to **“Think Safe and Be Safe”** to verify that a circuit is de-energized before beginning any task where they will be working with that circuit, this enables all of us to **“Get Home Safe”.**

Refer to SafeWork NSW Code of Practice: Managing Electrical Risks in the workplace

The need to seek medical assessment after sustaining an electrical shock:

Electrical current can have various impacts on the human body, ranging from mild discomfort to life-threatening injuries or even death. These include:

- Burns,
- Cardiac arrest,
- Nerve and muscle damage,
- Respiratory arrest,
- Psychological effects such as anxiety, depression, and post-traumatic stress disorder (PTSD).

All people who sustain an electrical shock must **immediately** seek medical assessment and an ECG. This can be via a visit to the UNSW Medical Centre or any hospital Emergency department. Please advise them that you have sustained an electric shock.

All exposures to electrical current must be reported immediately. You must notify your supervisor and the local safety team at the time of the incident.

Should you need further help and or advice please speak to your local safety team.

Further Information: safety@unsw.edu.au