**2.3 Electrical Safety Checklist**

Electrical safety, like all other types of safety, is important to your laboratory. It prevents personal injury as well as fire hazards. In 2009, the University of Manitoba had an electrical fire due to an electrical short in a refrigerator cord– this cost them 50 million dollars in damage. Use this checklist to assess equipment and electrical safety in your lab.

1. Outlets, Plates and Covers
   * Are outlet and switch covers in good condition?
   * Are the outlets and switches in good condition?

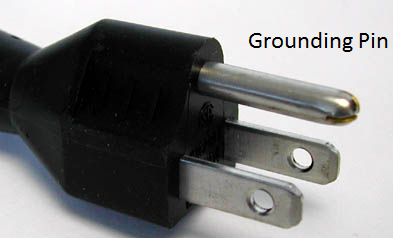
Not scorched, not warped,not discoloured?

If yes, no action is required

If no, the damaged items need to be replaced. **Contact Physical Resources at** [**fixit@trentu.ca**](mailto:fixit@trentu.ca) **or ex 1366**

1. Grounding pins are the round, third prong on plugs. Their purpose is to

prevent shocks in case an internal wire comes loose.



Are the grounding pins present and in good condition?

* + If yes, no action is required
  + If no, they need to be fixed or replaced. **Contact Science Shop Electronics**

**Technician at** [**rfox@trentu.ca**](mailto:rfox@trentu.ca) **or ex 7178**

1. Cheater plugs are devices that convert outlets with two slots to outlets with three

slots, so that a three pronged plug – one with a grounding pin, for safety – can be

plugged in. This is actually dangerous unless the cheater plug is properly

grounded. Cheater Plugs are not allowed at Trent University.

Is the area free of cheater plugs?

* + If yes, no action is required
  + If no, this will need to be replaced with a permanent outlet with three slots.

**Contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**

1. Cords have two layers of insulation – a protective coating that wraps around each wire, and then a larger coating that wraps around all the wrapped wires. If the insulation is damaged in any way, with tears, inner insulation exposed from the outer later peeling back, signs of fraying, or cracks it could cause fire or shock.
   * Are all cords in good condition?
   * If yes, no action is required
   * If no, replace the cords. **For permanent connections, Contact Physical**

**Resources at** [**fixit@trentu.ca**](mailto:fixit@trentu.ca) **or ex 1366. The Electronics Shop can replace cords on equipment Contact** [**RFox@trentu.ca**](mailto:RFox@trentu.ca)**. For questions, contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**

1. Are walking areas free of cords that could pose trip hazards?
   * If yes, no action is required

If no, this needs to be resolved. You should reroute the cords so they are

not across footpaths or obtain a cord cover mat. These solutions will protect people from tripping as well as protect the cords from wear

* Are there cords travelling through windows, doorways, or similar openings?
* If no, no action is required
* If yes, this needs to be resolved. Reroute the cords so that they do not pass

through these openings.

6. Cords need to be properly taken care of to reduce safety hazards. They should be kept

in safe places.

* + If cords are suspended, do they have strain relief?
  + If yes, no action is required
  + If no, the suspended cords will need strain relief. **Contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**
  + Are cords and connections within 1 metre of a water source?
  + If no, no action is required
  + If yes, the offending cords and outlets will need to have functioning Ground Fault Circuit Interrupters. **Contact Physical Resources at** [**fixit@trentu.ca**](mailto:fixit@trentu.ca) **or ex 1366 if you think you need a GFCI.**

1. At Trent, you are only allowed to use extension cords temporarily, otherwise you need to have an outlet installed. For Trent, temporarily means that the extension cord is only in use when somebody is present in the lab, and that the extension cord is unplugged overnight and when not in use.

* Are extension cords being used only temporarily?

If yes, no action is required

* If no, this needs to be resolved. Use the extension cords temporarily. Arrangefor a permanent outlet to be installed if necessary or use a power bar. **Contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**

1. Extension cords are rated for certain maximum amperage to pass through them based on the length of the cord. It is a potential fire hazard if you are not using a cord that is rated appropriately for the device.

This can be checked by looking at the extension cord and the device. The extension

cord should indicate its maximum amperage. The device should state the amperage it uses, and if the extension cord is rated for more amperage than the device, this is good.

* Are your extension cords rated appropriately?
* If yes, no action is required
* If no, obtain extension cords that are rated appropriately for your devices, or obtain power bars. **For questions, contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**
* **Be aware that plugging two extension cords together (other wise known as a daisy chain) must be avoided as this can create a fire hazard. If length is an issue, purchase the appropriate length extension cord, rated for the power you require.**

1. If you need more outlets, power bars with circuit breakers (overload protection) could be used. Outlet expanders should be avoided – these are often made of hard plastic and turn either one outlet into three, or two outlets into six. These are unsafe because they usually do not come with circuit breakers (overload protection).

* Are approved power bars with circuit breakers being used?
* If yes, no action is required
* If no, this needs to be addressed. Obtain power bars with circuit breakers

to replace power bars without circuit breakers and outlet expanders. Or

consider installing a permanent outlet. **Contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**

1. Do circuits blow on a regular basis?
   * This means that too much electricity is being drawn through the circuit.

* If no, no action is required
* If yes, this needs to be fixed. **Contact Physical Resources at** [**fixit@trentu.ca**](mailto:fixit@trentu.ca) **or ex 1366 for advice on how to resolve the issue.**

1. Are all machines/equipment CSA, ULc or Ontario ESA approved with a sticker or plate?
   * These companies ensure that the machines and equipment are in working

order and are safe to operate. The stickers or plates are most often found on a motor, or the back of the machine. The stickers or plates will contain

information regarding the voltage, amperage and wattage and will also have safety symbols on it.

* If yes, no action is required
* If no, the equipment needs to be approved. **Contact Science Facilities**

**Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**





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1. Has all electrical work greater than 120 volts of alternating current (a/c) been done by aqualified person?

* If yes, no action is required
* If no, the electrical work will needs to be evaluated. **Contact Science Facilities Manager at** [**cwilliams@trentu.ca**](mailto:cwilliams@trentu.ca) **or ex 7061**