Electrical low hazard incident at the ALS: Monday, Sept. 18, 2017

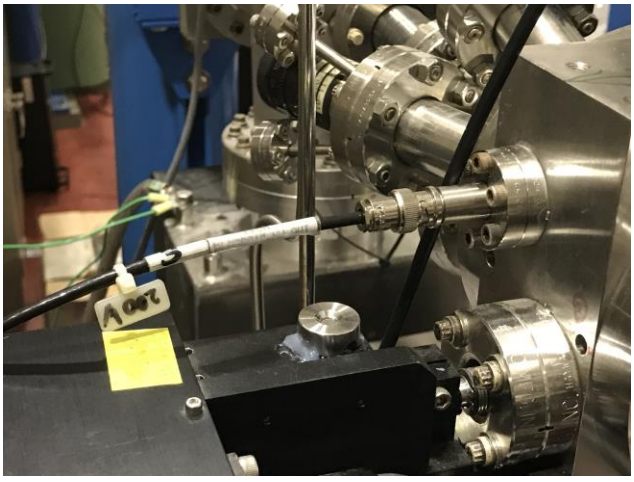
Yesterday we had a near-miss with a non-hazardous shock at ALS. During demolition of equipment at Beamline 5.3.2, a non-QEW (this person had previously been a QEW, but is not currently in that role) was tracing the source of a coax cable connected to a diagnostic chamber. Because of access constraints and the fact that the label was upside down, the person decided to unplug the cable to more closely examine the label. Unfortunately, in doing so he received a minor shock to the palm of the hand. The cable was well grounded, the connector was a BNC type, and the shock occurred from the center pin, across the surface of the palm, to the grounded barrel. The shock was reported immediately and the person was escorted to medical for evaluation. The person was released for work and was not injured. However, the escort was not current on CPR training as required by our policy

Subsequent investigation by the ALS ESO revealed that the cable was powered by an Acopian power supply rated at 1 kV DC, 30 mA , and set at about 250 VDC. Note that this falls into hazard classification 2.1c (100-399 VDC, and <40 mA) and as a result is considered non-hazardous. The connection should have been made with a Safe High Voltage (SHV) connector, which would have been finger safe. Also, the labeling was wrong and referred to the wrong rack, which led to confusion and was the reason for investigation in the first place.

Still, the same conditions with a different power supply could have led to a hazardous shock with potential for injury.

Key Takeaways:

1. In general, we do not want to unplug cables that are still energized on the end that we're holding. Always unplug at the source end first. Even "finger safe" plug designs can create a hazard when left unattended and energized.
2. When there is a minor shock, the escort must be current on CPR training. In this way they will be able to provide immediate and qualified assistance in the event of delayed onset of fibrillation on the way to medical.
3. Proper labeling helps everyone, and improper or confusing labeling can lead to disaster. Ensure cables and panels are correctly labeled and easy to read.
4. For HV connections, only use the correct voltage rated connectors. Even if the voltage is dialed down, refer to the highest rated output of the power supply when selecting connectors.



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