Lessons learned from Incident "Improper Modification of Power Supply"

Summary of Incident #1: At one of our VUV beam lines, a visiting research group needed to supply a negative electrical bias to a sample under study. With no guidance and little experience, members of the group attempted to modify the high voltage connections on a 2000-volt, 100 mA DC power supply to provide the needed bias. The modification was improperly done and resulted in a significant shock hazard on the shell of the SHV connector of the high voltage cable. The power supply did not operate properly after this modification and the users ceased their efforts, but did not restore the supply to its original configuration; thereby leaving a potentially hazardous condition for subsequent groups. The next user at the beam line also sought to use the power supply, and contacted the Local Contact (not present at the NSLS) for advice when he realized that it was not functioning properly. He was unable to determine the problem and also discontinued use of the power supply. Several days later, the local contact returned, quickly identified the problem and reported it to the NSLS. No one was injured and there was no electrical shock to personnel, but an unsafe condition was created and existed off and on for a number of days before it was identified and corrected.

Lessons learned

- Management of change in equipment or component configuration is necessary to provide a safe working environment. It is very important to emphasize to visiting users in BLOSA training that changes in equipment at a beam line should not be made unless review and approval by responsible staff have been provided. Although this incident involved an electrical power supply, care should be given to a) identify and discuss all beam line equipment related to the experiment that have other potential hazards such as chemicals, compressed gases, cryogenics, magnetic fields, or radiation, and b) clearly indicate portions of the beamline and other equipment that are off-limits to the users. In general, it is important to emphasize to the users their roles and responsibilities for safety, and in particular ensure that the lead experimenter understands his/her role for safety while the research team is present at the NSLS.

- Support and oversight of visiting users by the PRT and NSLS plays an important role in providing a safe work place, particularly for inexperienced users who may not fully understand the requirements and expectations for safe work at the NSLS. In some cases, additional guidance may be needed to ensure safety and operational requirements are not violated due to misjudgment or misunderstanding by personnel who are not as well informed as regular staff.