**ELECTRON MICROSCOPE AND X-RAY DIFFRACTION UNIT RADIATION SAFETY GUIDLINES FOR USERS**

**Irvine Materials Research Institute (IMRI)**

While radiation levels inside electron microscope (EM) and X-ray diffraction (XRD) units can be high, most modern EM and XRD units are extremely well shielded and do not produce radiation levels outside of their housing. However, devices are still considered radiation-producing machines and can leak radiation if shielding is compromised. A poorly designed or repaired device may have weak shielding points where X-rays can escape.

The following is a list of guidelines each user must be aware of and follow to use EM and XRD units in the IMRI to ensure they and the workers around them remain safe.

* Only personnel trained and approved by the responsible principle investigator or his or her designee may operate an EM or XRD.
* Do understand that being trained on one EM or XRD does not qualify you to operate all radiation producing machines.
* Do not deviate from any operating procedures or manufacturer recommendations.
* Do read and understand the posted emergency procedures prior to using an EM or XRD for the first time.
* Do be aware of the “Notice to Employees” posting near each EM or XRD. This posting describes the regulations pertaining to radiation producing machines and employees rights.
* Do not allow any unauthorized person to use an EM or XRD.
* Do not bypass any safety features or interlocks located on an EM or XRD.
* Do not modify the built-in shielding and viewing ports of these machines. If modifications must be made, contact the Principal Investigator and the Radiation safety Division prior to any work.
* Do not change the location or dispose of EM or XRDs without first contacting the Radiation Safety Division.
* Do contact the Principal Investigator and the Radiation Safety Division if major maintenance or repairs have been performed on an EM or XRD that may negatively affect the integrity of the machine. Radiation surveys may be required prior to operating the machine.
* Do contact the Radiation Safety Division if you would like to review the radiation survey documents or the California Radiologic Health Branch Regulations.