San Francisco State University
Radiation Safety Office

General Comment
X-ray beams from XRD units are hazardous because of the high intensity (100,000+ rem/min. exposure rate) at the exit port. Serious injury can result if any body part is exposed to this high radiation even for a very short time. Furthermore, x-ray beams are often small and difficult to locate and/or measure so extreme caution must be exercised when working with an XRD. Don't take the safety of an enclosed system for granted.

XRD General Safety Protocol --- Authorized Users

1. Only individuals on the authorization may operate the x-ray machine. All authorized users must receive documented instruction in and demonstrate an understanding of safety and the operation of the machine before starting work. Do not allow unauthorized people to use the x-ray machine.

2. Unauthorized and untrained visitors/observers must leave the room when the machine is being serviced or during tasks requiring access to the primary beam.

3. Only specially trained and authorized technicians may make repairs, fix malfunctions, or attempt to align x-ray cameras or crystals.

4. Make sure x-ray tube shutter is closed before changing samples and verify there is no active beam present. Check warning lights, current, and beam voltage.

5. Do not bypass safety interlocks. Use the interlocks, barriers, and administrative controls provided. Use the main switch to turn off power to the x-ray tube – do not use the interlock for this purpose.

6. The RSO will determine whether dosimetry badges/rings are required when the x-ray machine is producing ionizing radiation. If required, dosimetry badges shall be supplied by and returned to the RSO in accordance with established time tables and protocols.

7. Accurately maintain the XRD operating log that includes date, operator name, beam voltage, current, and time ON and time turned OFF (total time of exposure).

8. Notify the Radiation Safety Officer (RSO, Linda Vadura, ext. 8-6892) immediately concerning any abnormal personnel radiation exposure or suspected exposure or in case of unusually high survey readings.

9. In an emergency, shut off power to the x-ray, leave the room, close the door, and contact Campus Police at 911 or 338-7200.

10. Room must be kept locked when not in use.

Authorized User: I have read this XRD general safety protocol and understand what it requires. I agree to abide by this and other protocols established by SFSU and XRD managers.

Print First Name    MI    Last    Signature    Date

XRD Principal Investigator:
The person listed above has received instruction and demonstrated competency on the operational and safety protocols for the Bruker D8 Advance XRD. I authorize this person to be an Authorized User.

Responsible Principal Investigator Signature: __________________________        Date: ___________

A copy of this protocol must be posted. Contact the RSO for information regarding radiation safety or surveys. A copy of the California Radiation Control Regulations (Title 17) is available from the RSO.

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