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Staff authorized to use the XRD shall comply with the following regulations:

1. X-ray analysis devices may be used by specifically authorized personnel only, whose names have been communicated to the qualified Expert in charge of protection against ionizing radiation.
 2. The use of the above equipment in ways different from those agreed with the expert and qualified officer and from those shown in the user manual provided by the manufacturer is absolutely prohibited.
 3. Structural changes to equipment designed to contain or produce X-rays is prohibited, except those intended to increase operation safety. Any such changes will be made only upon a written favorable opinion from the qualified Expert and, if necessary, from the manufacturer.
 4. When the instrument is operated, the sample cell located on the right must be kept closed at all times, including when not used (e.g. no sample inside) and keep the internal leaded glass positioned in front of the measuring area.
 5. Maintenance and repair operations are exclusively allowed to the qualified staff in charge.
 6. During maintenance or repair operations, operators must be equipped with personal dosimeters.
 7. Maintenance or repair operations must be conducted as follows:
 - a) Operations shall be carried out under the oversight of the worker in charge of the operation of the device.
 - b) The device shall be unplugged from its power supply.
 - c) If it is necessary to temporarily disable any safety features (such as, for example, connect plug back to power supply), this must be reported immediately to the worker in charge of the instrument. He or she will check that the disabled features will be restored as soon as possible.
 - d) In the event that operations under b) cannot be followed, the power supply will be set to the lowest kV and mA.
 - e) In the event that operations under d) cannot be followed, operators must not stay near the device in the direction aligned with the X-ray beam.
 - f) In the cases under d) and e), workers not in charge will not be allowed to stay near the device.
 - g) In no case shall operators attempt any servicing or other type of operation involving the removal of caps, covers, shielding materials, or X-ray tube housing; nor shall non-ordinary operations to replace filters, shutters, collimators etc. be conducted, without having previously carried out and confirmed the deactivation of the X-ray tube, for example, by disconnecting the power supply line.
 8. After maintenance or repair operations directly involving the X-ray tube or protection casings, shutters, collimators, or any radiation detecting devices or after operations related to the development, alignment or changes to devices that can affect the radioprotection features of the device itself, the device will be restarted only after approval from the qualified expert.
1. Pregnant female workers are not authorized to conduct any of the operations covered by these regulations.
 2. A copy of these Regulations must be displayed at all times in the XRD Lab.

Operators are required to comply with the following behavior rules:

1. Take good care and use properly all safety and protection devices.
2. When the device is on, keep the sample-holder cell located to the right closed at all times, including when not used, and keep it covered by the leaded glass.
3. Report immediately to the employer, the supervisor or to the officer in charge, any faults in the above devices or any hazardous conditions that they may become aware of.
4. Do not remove or modify, if not authorized, any parts of the equipment.
5. Do not attempt, on your own initiative, any operations or procedures for which you have not been authorized or that may hamper protection or safety.
6. Avoid using the device if the warning signals or protection devices are not working properly.
7. Have a good knowledge of specific risks to which you are exposed and of the correct work procedures.
8. Abide by work procedures and by internal regulations.

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Personal dosimeter use regulations

1. Each worker in charge of using the X-ray device must always be equipped with a personal dosimeter.
2. The ring dosimeter must be worn on the finger at all times when operating the X-ray diffractometer.
3. Using another exposed worker's dosimeter is prohibited.
4. Using the dosimeter for activities involving ionizing radiation hazard outside Fondazione Kessler is prohibited.
5. It is forbidden to tamper with or falsify in any way the dosimeter information.

Personnel in charge of operating the XRD APD-2000 device:

Acknowledgment signature

1. Bensaada Laidani Nadhira
2. Micheli Victor
3. Safeen Mian Kashif

The Employer

The Head of the Research Unit

September 2013



OPERATIONAL INSTRUCTIONS

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