

Name

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Assignment

Radiation Protection

Mam

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Bs Radiology 4th Semester.

Answer No: 01

Radiation Protection officer :-

- ⇒ Acting as the Point of Contact within the university for the external Radiation Protection advisers (RPA) for Medway and Avery Hill Campuses.
- ⇒ Act with the delegated authority of the Faculty operating officers (Fos) in matters of urgency and referring promptly to the Foo or University Health and Safety unit and/or the RPA, any ionising radiation protection problems which cannot be resolved locally on a time scale commensurate with the risk.
- ⇒ Acting as the Point of Contact within the university for Regulators relevant to ionising radiation compliance i.e. the Environment Agency and Health and Safety Executive.
- ⇒ Managing Environment Agency Permits including:
 - * oversight of application for new or variations to existing EA Permits.
 - * Advise on routes of radioactive waste disposal.

⇒ Provide advice on: Procedure for disposal of radioactive waste via authorised contractors.

⇒ Managing facility or site decommissioning.

⇒ Applying and managing maintenance of a Best Practicable means Culture in management and operations including.

* Advising on design standards for laboratories and designation of areas.

* Providing site specific information to the RPA.

* Contributing to the production of local rules and any local radiation safety policy.

Answer No: 02

Radiation Protection in Radiology Department :-

⇒ The increased use of ionization radiation for diagnostic and therapeutic purposes, the rapid advances in computed tomography as well as the high radiation doses delivered by interventional ~~doses~~ procedure have raised serious safety and health concerns for both patients and medical staff and have necessitated the establishment of a radiation protection culture in every Radiology Department.

⇒ Radiology Department with an emphasis on promoting RRC in the interventional Radiology environment.

⇒ Keywords Radiation Protection culture, Radiation Safety, Radiology Department, Interventional radiology.

⇒ Core tip Radiation Protection Culture is a combination of knowledge, beliefs and practices related to radiation safety.

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Safety measures in Radiology Department:-

- ⇒ RD.8.1 There is a Safety Plan that indicates the periodic inspections, maintenance, and calibration of all equipment.
- ⇒ RD.8.2 The Safety Plan involves the management of radioactive materials used for therapeutic and diagnostic purposes, particularly with regard to handling, storage, and transportation.
- ⇒ RD.8.3 The Safety Plan involves posting of safety warnings on the doors.
- ⇒ RD.8.4 The Safety Plan involves checking female patients for pregnancy before exposure.
- ⇒ RD.8.5 The Safety Plan indicates monitoring of the staff for radiation exposure at least quarterly.

Tests:-

- RD.10.1.1 Automatic Exposure control (AEC) Test
- RD.10.1.2 KVP reproducibility and repeatability.
- RD.10.1.3 Half value layer test.

Answer No:03

Radiation Hazards :-

- ⇒ Maximum beam diameter should be 7cm (circular beam).
- ⇒ Use rectangular collimation for intraoral films.
- ⇒ Minimum target skin distance should be 20cm.
- ⇒ Accurate timer.
- ⇒ Use open-ended lead lined cylindrical cones (PID)
- ⇒ Do not use close ended pointed plastic cones.
- ⇒ Shielded enclosures are constructed and exposure devices are manufactured in compliance with authorization.
- ⇒ All safety system and components of shielded enclosures and exposure devices are of the required quality.
- ⇒ Personnel are trained and competent to operate the exposure devices safely;
- ⇒ Approved operational procedures are being followed;
- ⇒ exposure devices and shielded enclosures are appropriately surveyed and maintained;

⇒ Sources are sealed and leak free,
⇒ dosimetric and medical surveillance
of the workers are carried out
correctly.

⇒ The response to incidents follows
the agreed emergency plan or
regulatory requirements.

⇒ Exposure devices and shielded
enclosures are maintained in
a safe and secure condition
at the end of use or are
decommissioned safely.

⇒ The source inventory is
properly maintained.

Answer No: 04

The following are the Safety measurement for the radiologic technologists:-

- ⇒ X-ray rooms have barrier walls and windows that keep exposure inside the room.
- ⇒ During these imaging procedures, radiologic technicians leave the room, or stand behind a protective shield, such as a curtain, that is designed to keep out radiation.

⇒ Annual occupational dose:-

- ⇒ Dose limits are recommended by the International Commission on Radiological Protection ~~or Radiology~~ (ICRP).
- ⇒ They are in place to ensure that individuals are not exposed to an unnecessarily high amount of ionizing radiation.
- ⇒ Dose limits are fundamental component of radiation protection.
- ⇒ 20 mSv a year, averaged over defined periods of 5 years with no single year > 50 mSv

⇒ The equivalent dose to the lens of the eye :-

⇒ 20 mSv a year, averaged over defined periods of 5 years with no single year > 50 mSv² (this was previously 150 mSv a year and updated in 2013)

⇒ The equivalent dose to the skin :-

⇒ (Averaged over 1 cm^2)

⇒ 500 mSv in a year

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