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Assignment

Radiator protection

instructor

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program

BS (Rad)

(2)

Q NO 1

Ans

Role of Radiation protection officer in radiology department.

→ the radiation protection officer is a specialist in radiation. it is important in radiology department.

① The Role of radiation protection officer is support hand with ionising radiation by ensuring arrangement are in place to manage radiation risks

② The Radiation protection officer is carried out safely he can responsible the public people protect for harmful radiation does.

(3)

- ③ Acting on the point of contact within the external radiation protection adviser.
- ④ it is also for regulator relevant to ensuring radiation compliance.
- ⑤ preparing periodic status report on radiation safety in radiology department
- ⑥ - Managing environment safety permits
 - * Manage the collection of waste record and make pollution return to Environment Agency,
 - * Advise on route of radioactive disposal
- ⑦ Arranging for disposal of radioactive waste to authorised contractor.
- ⑧ Managing facility or site decommissioning

(4)

9) In Radiology department such like hospital area \Rightarrow these are different type of rays and radiation used. its bad effect on people, the radiation protection officer equipment used for protect the people for radiation.

10) Managing in inventory of equipment capable of emitting x-rays.

11) Investigating incidents and reports incident when appropriate to the relevant regulatory authority.

12) Advising on training in radiation safety.

13) Managing a system for the provision of personal dosimetry and associated record-keeping.

14) Advising to radiation protection supervisors.

(5)

(15) The Radiation protection officer should be responsible for the radiation safety including the protection of workers and patient.

(16) they may also responsible for operation involving radioactive waste, management of the facility.

Q No 2

Ans:

① The safety plane involves checking female patient for pregnancy before exposure.

② The safety plane indicate monitoring of the staff for radiation dose at least quarterly.

(3) The safety plane is implemented as evidenced by the daily practice.

(4) The safety plane involves posting of safety warning on the doors.

(5) The safety plane involves management of radioactive material used for therapeutic and diagnostic purpose.

(6) The radiology department the following test are conducted

- ⇒ Automatic Exposure Control test
- ⇒ KVP reproducibility and Repeatability.
- ⇒ Half value layer test.
- ⇒ Alignment of collimator and x-ray fields.
- ⇒ mean glandular test.

(7) Radiation effect.

Physical effect.

It may be immediate or delayed.

(7)

Genetic effect:

Birth the defect due to irradiation to reproductive cells before conception.

Teratogenic effect.

Cancer or Congenital malformation due to radiation exposure to fetus in uterus.

(8) Radiation Exposure:

✶ The risk of exposure should balance the medical benefits,

✶ Optimize the radiation dose by exposing patient only to enough radiation to get a clear image.

(8)

(9) Biological effect.

- ⇒ Cause DNA Damage
- ⇒ Create ionization in body leading to free radicals.

(10) Radiation protection.

(1) Minimize Exposure

- Remember to minimize your exposure at all possible times.

(2) Measure Radiation doses Dosimeters.

- Use to measure the occupational dose equivalent from α -rays, gamma and high energy beta emitters.

- Always practice ALARA.

(9)

(11) Effect on time.

* Minimize the time
and you will minimize
the dose.
=> the procedure to
minimize exposure time.

(12) Effect on Distance

The Distance are greater
in between the
Source and patient
it can reduce exposure
intensity:

(13) Room Shielding

* Lead lined plaster
board
Lead glass viewing
window.

Q No 3

Ans

Radiation Hazards:

⇒ Radiation injury causes change in the living tissue causing radiation sickness.

* Somatic effect:

* genetic effect: harmful to the person

Reflected in the offspring.

⇒ The early effect of radiation is a result of direct injury to the tissue, and also the destruction of radiosensitive cell lead to radiation sickness. The effect is included, Nausea, Vomiting, diarrhoea, Fever etc

(11)

⇒ The delayed effect of radiation is ⇒ Shortening of life span, leukemia, malignant tumours, and cataracts. This symptom appears after a month or many years of exposure.

⇒ The soft tissue exposed to X-rays or gamma rays, the biological effect of various types of radiation differ a lot.

⇒ Radiation decomposition - the splitting of water molecules into ions H^+ and OH^- and also splitting other solvent of the body.

⇒ Kinetic energy of the incident photon heats up the molecules of the living tissue.

(12)

⇒ Incident photon enters through the body tissue and knock out the bound electron free from their parents atom or molecule. therefore the

free electron is very unstable and interact with other atom and with irradiated system.

⇒ α , β and gamma is harmful radiation for human body.

⇒ these harmful radiation change the body system and occure mutation in body.

⇒ we can protect himself that we should beware off.

⇒ Pregnant women and person under 18 years of age

(13)

Should not be involved
in radiographic work
if it is very
badly effect on
fetus and gonads
area which ~~can~~
cause sterility or
infertility.

⇒ When we take
x-rays for the
patient, ~~the~~ ~~work~~

⇒ the patient wear
gonad shield when
x-rays are not ~~also~~
exposed in that
area this is more
significant &

⇒ The lead shielding
material in the gloves
~~can~~ the reduce the
scatter radiation dose.

(14)

⇒ Apron may be minimize dose.

⇒ Check the equipment periodically for possible leakage.

⇒ X-ray room should be away from people.

Q NO 4

Ans

Radiation Technologist
Job protection of
radiation.

⇒ The lead^{ed} shielding material in the gloves and apron reduce of scatter radiation dose.

(15)

- ⇒ Apron should have minimize radiation dose.
- ⇒ X-ray room be away from public place, or people, it is bad effect on people.
- ⇒ During exposure the radiologists leave the room, or stand behind the protective shield.
- ⇒ Technologist also wear shielding device.
- ⇒ ~~the~~ mask will wear which is very necessary for radiologist.
- ⇒ The radiologist protect himself for radiation such as gives to the patient low kVp and mAs.

⇒ Technologists wear badges that measure exposure radiation and detailed record keep track of this order to prevent it from exceeding lifetime

⇒ X-ray Technologists observe the principle of ALARA

⇒ Female Technologist if their is pregnancy to avoid the risk to the baby, they radiation need effect on fetus.

⇒ The Technologist check all the equipment for periodically for possible leakage.

⇒ gloves must be used during exposure.

(17)

Occupational does for Technologist.

=> The radiologic Technologist perform diagnostic imaging examination on patient.

=> The Technologist more ~~work~~ than ~~work~~ half work in hospital.

=> Overall employment of ~~radiologic~~ radiologic Technologist is project - to grow 9% percent from 2018 to 2028 faster than the average for ~~an~~ occupation.

=> there will be medical field increases time to time.

=> Now days the medical field is more grow than other field.

=> The Occupation does annuly ~~more~~ for Technologist must be grow.