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ID 15292

Q1: Describe the role of radiation protection officer in radiology department.

Role of radiation protection officer.

A Radiation protection officer is an individual who has relevant to the type of practice:

- A working knowledge of the legislation, guidlines, codes of practice and standards.
- Knowledge and skills in measuring and monitoring radiation and interpreting radiation measurment.
- Knowledge and skills is applying radiation safety and protection principals
- Knowledge of biological effects of radiations.
- The competency to perform the function of a radiation safety officer.

A radiation safety protection officer either holds have specific functions in radition safety and protection plan.

- Radiation protection officers ~~is~~ are Responsible for ensuring the safe use of ionizing radiation producing equipments.

- They are responsible for x-ray equipment that is under their administrative control, and must ensure that the radiation protection quality assurance program.

- They are responsible for the day to day operations of the radiation safety protection assurance program.

- Key Receive must RSO specific training and has additional responsibilities.

- They provided sufficient time and Commitment from the registrant to stop operations that he or she considered un protected, . ensur x-ray equipment is used safely. and

- Preparing periodic status reports on radiation protection.
- Managing envirement
- Auditing holdings and usage record
- Auditing waste accumulation in stores.
- Performing measurement to check radiation doses, dose rate and activity.
- Arranging of disposible disposal of radioactive waste to authorised contractors
- Managing the security of radioactive sources according to current national requirements.
- Managing facility
- Managing a system for the provision of personal dosimetry
- Managing an inventory of equipment capable for emitting x-rays
- Advising on training in radiation safety.

Q2: Elaborate the radiation protection measures in a safe radiology department.

Ans. Measure your Radiation dose Dosimetrs.

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

- Always practice ALARA (as low as reasonably acheivable)

Three effective strategies:

Time: Minimize the time and you will minimize the dose.

pre-plan the procedure to minimize exposure time

Distance:

Doubling the distance from the source can reduce your exposure intensity by 25% (inverse square law)

- know the radiation intensity where you perform most of your work, and move to lower dose areas during work. delays

Sheilding:

Position sheilding between yourself and the source of radiation at all permissible times. Take advantages of permanent sheilding.

Select appropriate sheilding materiel during the plaining stages of the proccolures.

Q3: What are radiation Hazards that one should beware off.

Radiation Hazards:

Ionizing radiation can damage living tissue in the human body. It strips away electrons from atom breaks some chemical bonds.
Spontaneous decay of radioactive material produces radiation Radiation may be ionizing and non-ionizing. Alpha and beta, gamma and x-rays particles are the most common forms of ionizing radiations.
Radio active iodine is a particle released during nuclear plant accedent. The amount of energy the radiation can deposite in a given space varies with each type.
Radiation also differ in the power to penetrate. In side the body the alpha particles will deposite all its energy in a very small volume of tissue while gamma radiation will spread energy over a much larger volume.

The allowed exposure from e specific radioactive sources to the pubic are limited to 100 mrem. Medical x-rays generally deliver less than 10 mrem.

All kinds of ionizing radiation produce health effect. The damage incurred by different kinds of tissue vary with the type of radiation to which the person is exposed and the means of exposure.

Direct exposure to radiation and radiation emitters can effect the whole body while inhalation or ingestion affects tissue inside the body. The body attempts to repair the damage caused by radiation

The thyroid gland is one of the most radiation sensetive parts of the body especially in babies and children. Most nuclear accedent release radioactive iodine into the atmosphere. This is absorbed by the body. Absorption of too much radioactive iodine can cause thyroid cancer

to develop several years after exposure.

Exposure to radiation is a safe in small amounts and when it is strictly controlled during a medical exam. such as x-ray.

However long term exposure to small amounts of radiations can lead to gene mutations and increase the risk of cancer and exposure to a large amount over a brief period can lead to radiation sickness. examples or

= DNA fragmentation
= Hazards to biological systems
= Electricle hazards
= Fire Hazards

= High energy electromignatic radiation are particle radiation are capable to producing ions in their passage through matter.

indirect effect:-

= Since 80% of the biological tissue in water
= Most of the incident radiat...

Q4: How a radiation technologist can protect himself / herself from radiation, what is annual occupational dose.

Ans: Radiologic technicians (also called x-ray techs) prepare patient and equipment for imaging procedures, maintain patient record and help doctors examine the resulting image.

x-rays rooms have barrier walls and windows that keep exposure inside the room.

During these imaging procedures, radiologic technichians leave the room; or stand behind a protectiv sheild, such as a curtain that is design to keep out radiation.

In most circumstance, you will only be close to the equipment before the procedure and afterwards.

There is a few exceptions, however, such as interventional radiology, during which radiologist and technologe technichan may be present in the room to treat the patient using x-rays and other imaging techniques as guidance.

Technicians also wear shielding devices, such as lead aprons, gloves, goggles and masks for radiation protection whenever necessary.

Technicians wear badges that measure their exposure to radiation, and detailed records keep track of this in order to prevent it from exceeding the recommended lifetime limits.

X-ray technicians observe the principal ALARA (as low as resonably achievable).

Female technicians should inform their employers if they think they are pregnant to avoid any risk to the baby.

There is no consensus on wheather a pregnant women can continue working in radiation areas, but it depends on the circumstances. Some workers are exposed at very low levels and do not have to change their work responsibilities, but a pregnant employee should discuss the risks with her employer as soon as possible.

Annual occupational dose:

In additional to the annual dose limits, the license shall limit the soluble uranium in take by an individual to 10 milligrams in a week in consideration of chemical toxcity.

Rad Radian dayday
A dose of ionizing radiation received by a person at work. Where assigned duties involve exposure to ionizing radiation in one radioactive materiel.

	Activity	Typical dose
(1)	smoking	280 millirem/year
(2)	Radioactive material use in a UM lab	<10 millirem/year.
(3)	Dental x-ray	10 millirem per x-ray.
	"	
(4)	Chest x-ray	8 millirem per x-ray
	"	
(5)	Drinking water	5 millirem/yea
(6)	Cross country round trip by air	5 millirem/trip
(7)	Coal Burning power plant	0.165 millirem/ year.