



Radiation Protection

LECTURE FOUR Units of Radiation Protection

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Units of Radiation and Radioactivity

Radioactive materials emit radiation, which is measured by a survey meter. This rock has radioactivity (the ability to emit radiation).

Becquerel (Bq)
Unit for intensity of radiation:
one nucleus decays (disintegrates) per second = 1 becquerel

Sievert (Sv)
Unit of radiation exposure dose which a person receives:
associated with radiation effects

Units of Radiation: Becquerel and Sievert

Becquerel (Bq)
Unit indicating the amount of radioactivity
One nucleus decays per second = 1 becquerel (Bq)

Radioactive materials

Sievert (Sv)
Unit of radiation exposure dose that a person receives
Associated with radiation effects

1 mSv from outside the body 1 mSv from within the body

Nearly equal effects on the human body

LECTURE FOUR : Units of Radiation Protection

❖ One – Rad (radiation absorbed dose)

- 1 - Rad is a unit of **absorbed dose** of radiation.
- 2 - Rad unit is a measure of the amount of **energy deposited in tissue**
- 4 - Rad unit can be used **for any type of radiation**.
- 5- Rad unit dose not **describe the biological effects on** the human body of the different radiations due to the weighting factor of radiation type Q.

Dose : it is a **quantity** of a radiation or drug taken or recommended to be taken at **one time**.

Radiation weighting factor: is a factor used to determine the equivalent dose from the absorbed dose averaged over a tissue or organ based on the type of radiation absorbed.

❖ Two – Rem (Roentgen equivalent man)

- 1- Rem unit is used to **measure biological effects** on the human body.
- 2- Rem unit is a unit that measures the **low levels** of different types of ionizing radiation.
- 3- Rem unit is a unit of **equivalent absorbed dose** of radiation which takes into account the biological effects.
- 4- The dose in **rem** equals the dose in **rad multiplied by the quality factor (Q)**.