

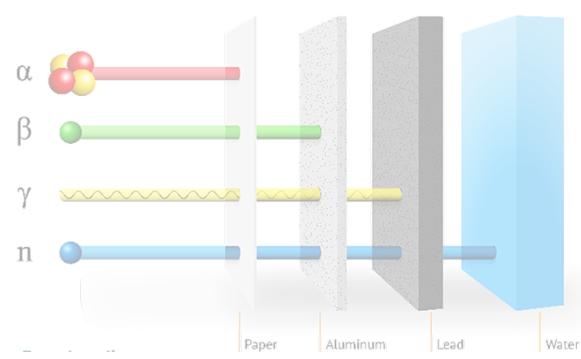
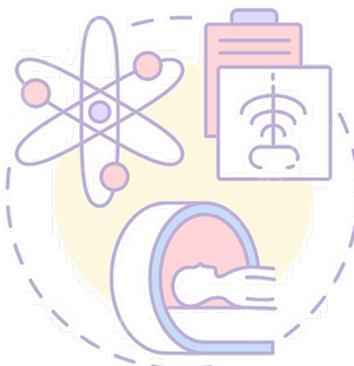
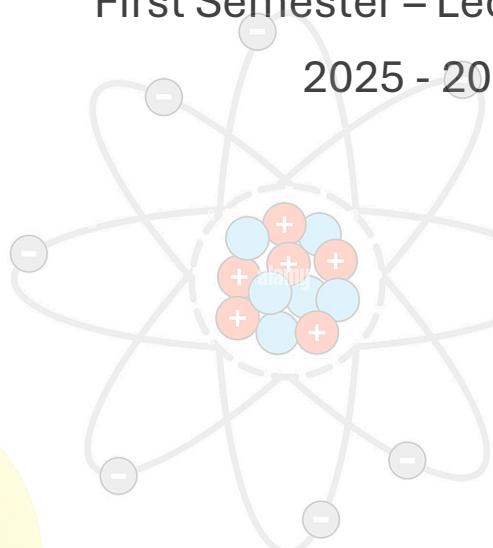
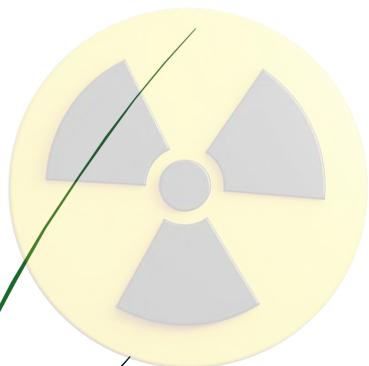


Radiation Protection

The Second Stage

First Semester – Lecture No. 4,5

2025 - 2026



Asses. Prof.: Mahmoud Abdelhafez Kenawy

Radiation Measurement Units

OUTLINES:

- ✓ System of Physics Units.
- ✓ Radiation Units.
- ✓ Exposure Units.
- ✓ Absorbed Dose.
- ✓ Equivalent Dose.
- ✓ Effective Dose.

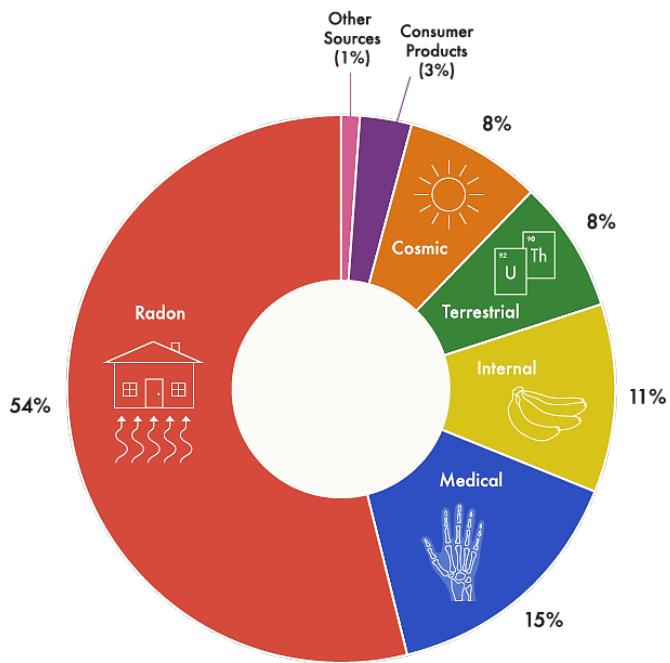
- Background Radiation.
- Peak Skin Dose.
- ALARA principles.
- Exposure doses for occupational, patients and public.
- Dose limits:
 - ◆ Maximum permissible occupational dose.
 - ◆ Occupational and non-occupational exposure – limit dose.
 - ◆ Maximum permissible public dose.
 - ◆ Maximum permissible Patient dose.
 - ◆ Whole body, tissues and organs dose limits.

What is Background Radiation?

Background radiation is a measure of the level of ionizing radiation present in the environment at a particular location that is not due to the deliberate introduction of radiation sources (لا يرجع إلى الإدخال المتعمد لمصادر الإشعاع).

Background radiation originates from a variety of sources, **both natural and artificial**. These include both cosmic radiation and environmental radioactivity from naturally occurring radioactive materials (such as radon and radium), as well as man-made medical X-rays, fallout from nuclear weapons testing and nuclear accidents.

Radon gas is the most background radiation present as the figure describes it. Radon is a chemical element; it has symbol **Rn** and atomic number 86. It is a radioactive noble gas and is colorless and odorless. Of the three naturally occurring radon isotopes, only ^{222}Rn has a sufficiently long half-life (3.825 days) for it to be released from the soil and rock where it is generated.



❖ Peak Skin Dose.

Peak Skin Dose (PSD) is the highest dose of radiation absorbed by a single, localized area of a patient's skin during a medical imaging procedure.

The maximum absorbed dose to the most heavily exposed localized region of skin (defined as the localized region of skin that lies within the primary x-ray beam for the longest period or multiple exposures during a fluoroscopically guided procedure). The notation used by the International Commission on Radiation