

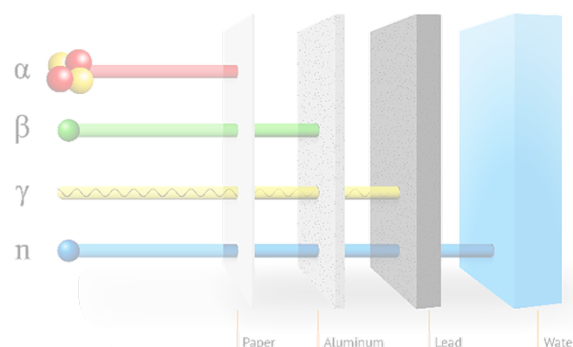
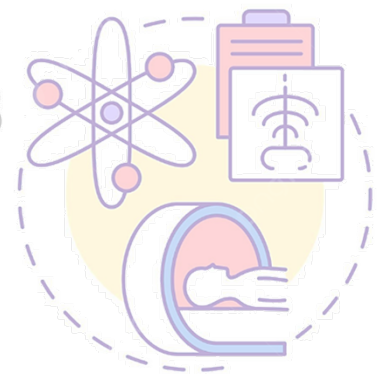
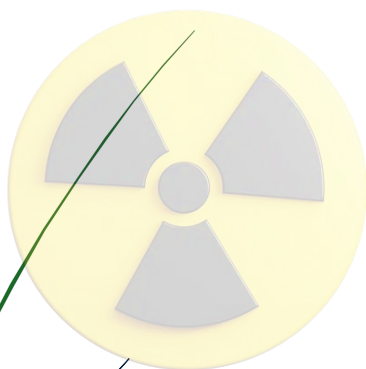
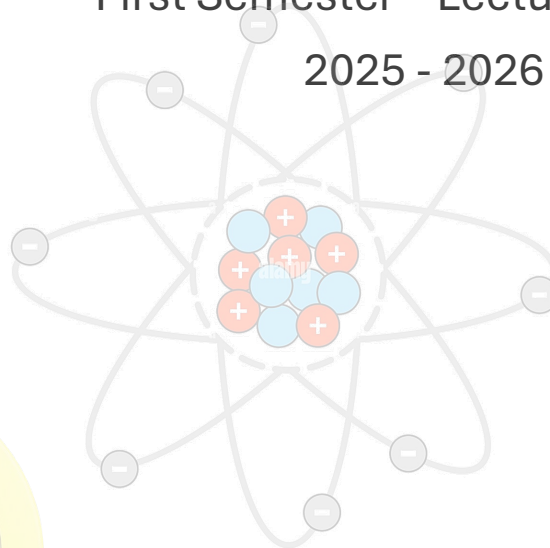


# Radiation Protection

## The Second Stage

First Semester – Lecture No. 4,5

2025 - 2026



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**Radiation Measurement Units****OUTLINES:**

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

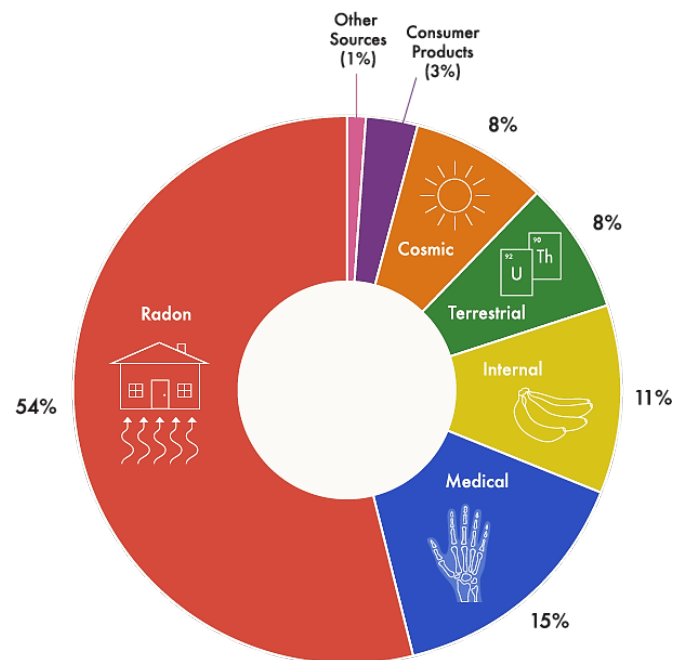
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- **Background Radiation.**
  - **Peak Skin Dose.**
  - **ALARA principles.**
  - **Exposure doses for occupational, patients and public.**
  - **Dose limits:**
    - ◆ **Maximum permissible occupational dose.**
    - ◆ **Occupational and non-occupational 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  $^{222}\text{Rn}$  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