

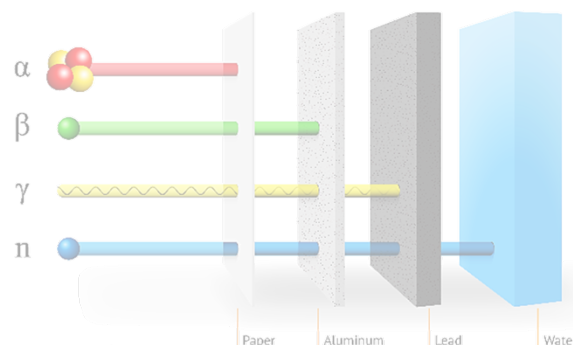
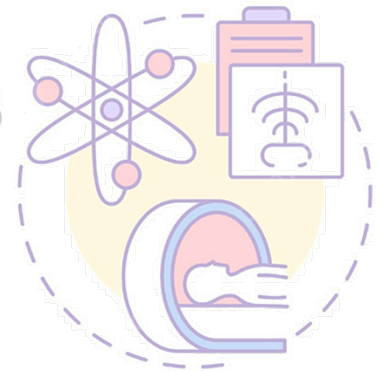
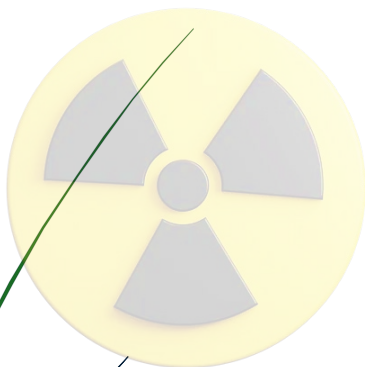
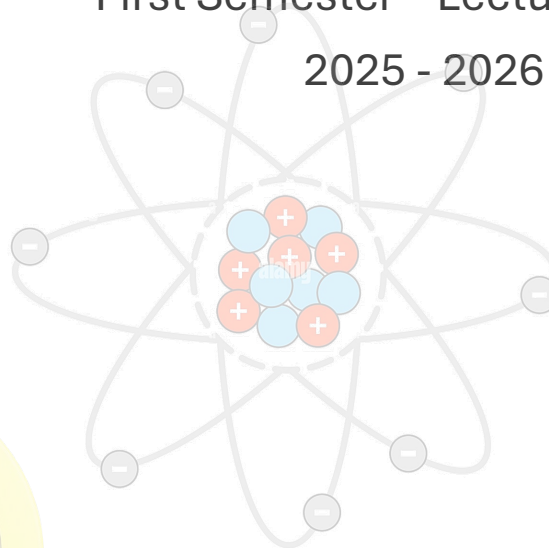


Radiation Protection

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.**

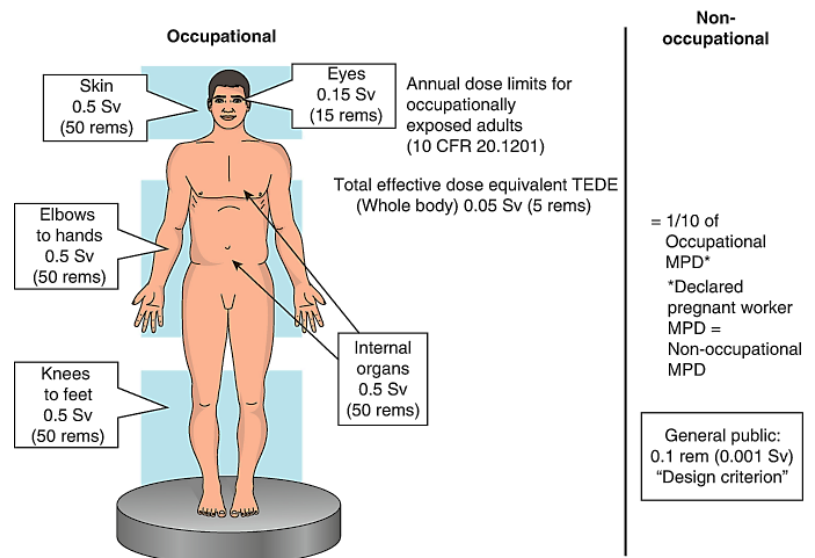
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- **Background Radiation.**
 - **Peak Skin Dose.**
 - **ALARA principles.**
 - **Exposure doses for occupational, patients and public.**
 - **Dose limits:**
 - ◆ **Maximum permissible occupational dose.**
 - ◆ **Occupational and non-occupational exposure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

The limits vary depending on the affected part of the body. The annual total for the whole body is 5,000 mrem. The next table explains limits dose related to part of body.

Organ, tissue	Occupational Dose Limits		Non-occupational Dose Limits	
	mrem/year	mSv/year	mrem/year	mSv/year
Whole Body	5,000	50	100	1
Lense of the eye	15,000	150	NA	NA
Shallow dose (skin and extremities)	50,000	500	NA	NA

Occupational and non-occupational (public) exposure limit dose:

The dose limit to non-occupational workers and members of the public are set at two percent of the annual occupational dose limit. Therefore, exposure to a non-radiation worker must not exceed 100 mrem/year. This exposure would be in addition to the annual background radiation.



How do you calculate occupational limit dose?

- For whole-body dose limit is assumed to be at the deep-dose equivalent (a tissue depth of 1 cm).
- For lens dose equivalent is the dose equivalent to the lens of the eye from an external source of ionizing radiation at a tissue depth of 0.3 cm.