

Radiation protection –practical 4

Radiation Dose Limits

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Radiation Dose Limits

- ▶ Doses are crucial safety guidelines established to ensure that radiation exposure remains within safe levels for workers and the general publics.
- ▶ Limits are set by international organizations such as the International Commission on Radiological Protection (**ICRP**) and the International Atomic Energy Agency(**IAEA**).
- ▶ **Dose limits** help ensure that no person is exposed to an excessive amount of radiation in normal situations.
- ▶ **They consider various factors**, including
 1. The type of radiation
 2. Duration of exposure
 3. The specific circumstances of the exposure.

Dose Limits Recommended by ICRP

- ▶ Limit on Dose from Occupational Exposure
- ▶ Limit on Dose from Medical Exposure
- ▶ Limit on Dose from Public Exposure

Dose Limit of Occupational Exposures

- **Occupational Exposures** : Exposures incurred at work, Any hazardous agent including all exposures incurred at work regardless of their sources.

<u>Occupational Exposures</u>	
Application	Occupational Exposure Dose limit
Whole body Effective Dose	20 mSv/year (averaged over defined period of 5 years, with not more than 50 mSv in single year) In INDIA, this provision is limited to 30 mSv should not exceed in any single year
Parts of Body: Equivalent Dose	
Lens of Eye	150 mSv/year
Skin	500 mSv/year (Averaged over areas of no more than any 1 cm ² regardless of the area exposed and nominal depth is 7.0mg/cm ²)
Head & Feet	500 mSv/year (Averaged over areas of the skin not exceeding 100 cm ²)

- ▶ **For Occupational Women:**
- ▶ **No special dose limits for occupational women in general i.e. As same as that of men are applicable (which has given above table)**
- ▶ **Once pregnancy has declared, special controls have to be consider to avoid deterministic effects (**Mental Retardation, congenital malformations**) in new born child**
- ▶ **The effective dose limit for pregnant woman is as like as general public **1 mSv** during remaining period of pregnancy**

Dose Limit of Medical Exposures

- ▶ **Medical Exposures:** Exposures incurred by individuals as part of their own medical diagnosis or treatment (patient).
- ▶ **Due to direct benefit of exposed individual, the commission recommends that dose limits should not be applied to medical exposures**

Dose Limit of Public Exposures

- ▶ **Public Exposures:** Exposures incurred by members of public from radiation sources(excluding any occupational or medical exposures) the normal a background radiation including exposure to natural sources

<u>Public Exposures</u>	
Application	Public Exposure Dose limit
Whole body Effective Dose	1 mSv/year (averaged over defined period of 5 years, with not more than 5 mSv in single year)
Parts of Body: Equivalent Dose	
Lens of Eye	15 mSv/year
Skin	50 mSv/year (Averaged over areas of no more than any 1 cm ² regardless of the area exposed and nominal depth is 7.0mg/cm ²)
Head & Feet	50 mSv/year (Averaged over areas of the skin not exceeding 100 cm ²)