

Various limits applied to Nuclear Medicine

Index

1. Disposal Limits for Sanitary Sewerage System
2. Disposal limits for ground burial
3. Limits for contamination on work surfaces
4. Surface Contamination Limits
5. Annual limit of Intake (ALI) and Derived Air Concentration (DAC) values for important radioisotopes used in medicine
6. Limits for High dose therapy

1. Disposal Limits for Sanitary Sewerage System

Radionuclide	Maximum limit on total discharge per day (MBq)	Average monthly concentration of radioactivity in the discharge MBq m ⁻³
³ H	92.5	3700
¹⁴ C	18.5	740
³² P	3.7	18.5
⁹⁹ Mo+ ^{99m} Tc	3.7	185
¹²⁵ I	3.7	22.2
¹³¹ I	3.7	22.2

2. Disposal limits for ground burial:

Radionuclide	Maximum Activity in a pit (MBq)
³ H	9250
¹⁴ C	1850
³² P	370
⁹⁹ Mo	370
¹²⁵ I	37
¹³¹ I	37

3. Limits for contamination on work surfaces

For alpha : 10^{-5} $\mu\text{Ci}/\text{cm}^2$ (0.37 Bq/cm²)

For Beta : 10^{-4} $\mu\text{Ci}/\text{cm}^2$ (3.7 Bq/cm²)

4. Surface Contamination Limits

Category of areas	Limits of Surface Contamination
Monitored areas (e.g. inside fume hood)	10^{-3} $\mu\text{Ci}/\text{cm}^2$ (37 Bq/cm ²)
Laboratory areas	10^{-4} $\mu\text{Ci}/\text{cm}^2$ (3.7 Bq/cm ²)
Other non-active areas	10^{-5} $\mu\text{Ci}/\text{cm}^2$ (0.37 Bq/cm ²)

5. Annual limit of Intake (ALI) and Derived Air Concentration (DAC) values for important radioisotopes used in medicine:

Radionuclide	Annual limit of Intake (Bq)		Derived Air Concentration (Bq/m ³)
	Ingestion	Inhalation	
^{99m} Tc	1.0×10^9	2.0×10^9	8.3×10^5
¹²³ I	9.0×10^7	2.0×10^8	8.3×10^4
¹²⁵ I	1.0×10^6	2.0×10^6	8.3×10^2
¹³¹ I	8.0×10^5	1.0×10^6	4.1×10^2
⁶⁷ Ga	8.0×10^7	2.0×10^8	8.3×10^4
²⁰¹ Tl	3.0×10^8	4.0×10^8	1.6×10^5
³² P	8.0×10^6	1.0×10^7	4.1×10^3
⁸⁹ Sr	6.0×10^6	1.0×10^7	4.1×10^3

6. Limits for High dose therapy

- Effective dose to the patient's comforter shall not normally exceed 5 mSv during the period of a patient's treatment;
- Dose to any family member other than comforter does not exceed 1 mSv/year.
- Radiation level at 1 meter from patient being discharged does not exceed 50 $\mu\text{Sv}/\text{h}$ at the time of discharge.