

RADIONUCLIDE DATA SHEET

[LUTETIUM]

Lu-177

71 protons

106 neutrons

Half Life: 6.73 days

Radiation: Decay Mode: Beta

Gamma Constant: 0.1 mR/hr per 1 mCi at 30 cm

Major Betas:

Max E(MeV)	Avg E (MeV)	# per 100 dis
0.498	0.149	78.6
0.385	0.112	9.1
0.176	0.048	12.2

Max. Beta Range in Air : 126.65 cm

Max. Beta Range in Water : 0.16 cm

Major Gammas:

E(MeV)	# per 100 Dis
0.321	0.219
0.208	11.0
0.113	6.4

Average gamma E = 0.175 MeV

Intake Data (annual):

Minimum Ingestion: 3000 µCi equals 5 rem TEDE (WHOLE BODY)

2000 µCi equals 50 rem CEDE (LLI wall)

Minimum Inhalation: 2000 µCi equals 5 rem TEDE (WHOLE BODY)

Doses:

Skin Dose: Reported for 1 µCi over 10 cm² of skin

1.82 mrad/hr (gamma dose)

Point Source: 483 mrad/hr (beta dose)

Disk Source: 483 mrad/hr (beta dose)

Shielding Information:

Maximum Range For Beta	Plastic	0.14 cm
	Aluminum	0.06 cm
Tenth Value Thickness For Average Gamma:	Concrete	0 cm
	Lead	0 cm

Detection information: Usable Detectors listed with estimate efficiencies

Ludlum 3 w/ pancake probe at 1 cm	%	Liq. Scint. Counter	%
Ludlum 3 w/ NaI probe near surface	%	Gamma Counter	%

Action Quantities:

Bench Top Quantity Must Be Less Than	20000 µCi
Containers Require Labeling When Greater Than	100 µCi
Rooms Require Posting When There Is Greater Than	1000 µCi
Contamination Lasting More than 24 hrs Require NRC Notification At	10000 µCi