

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 μ Ci equals 5 rem TEDE (WHOLE BODY)

2000 μ Ci equals 50 rem CEDE (LLI wall)

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

Doses:

Skin Dose: Reported for 1 μ Ci 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 μ Ci
Containers Require Labeling When Greater Than	100 μ Ci
Rooms Require Posting When There Is Greater Than	1000 μ Ci
Contamination Lasting More than 24 hrs Require NRC Notification At	10000 μ Ci