

RADIONUCLIDE DATA SHEET

[CALCIUM]

Ca-47

20 protons

27 neutrons

Half Life: 4.5 days

Radiation: Decay Mode: Beta

Gamma Constant: 6.5mR/hr per 1 mCi at 30 cm

Major Betas:

Max E(MeV)	Avg E (MeV)	# per 100 dis
0.690	0.241	82
1.988	0.817	18

Max. Beta Range in Air : 841 cm

Max. Beta Range in Water : 0.97 cm

Major Gammas:

E(MeV)	# per 100 Dis
0.489	7
0.808	7
1.297	75

Average gamma E = 1.20 MeV

Intake Data (annual):

Minimum Ingestion: 800 μ Ci equals 5 rem TEDE (WHOLE BODY)

Minimum Inhalation: 900 μ Ci equals 5 rem TEDE (WHOLE BODY)

Doses:

Skin Dose: Reported for 1 μ Ci over 10 cm² of skin
17.7 mrad/hr (gamma dose)

Point Source: 570 mrad/hr (beta dose)

Disk Source: 572 mrad/hr (beta dose)

Shielding Information:

Maximum Range For Beta	Plastic	0.97 cm
	Aluminum	0.45 cm
Tenth Value Thickness For Average Gamma:	Concrete	17 cm
	Lead	3.2 cm

Detection information: Usable Detectors listed with estimate efficiencies

Ludlum 3 w/ pancake probe at 1 cm	9%	Liq. Scint. Counter	80%
Ludlum 3 w/ NaI probe near surface	1%	Gamma Counter	8%

Action Quantities:

Bench Top Quantity Must Be Less Than	8000 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	4000 μ Ci