

# RADIONUCLIDE DATA SHEET

[BISMUTH]

Bi-207

83 protons

124 neutrons

**Half Life:** 31.55 years

**Radiation:** Decay Mode: Electron Capture

**Gamma Constant:** 4.72 mR/hr per 1 mCi at 30 cm

**Major Betas:**

Max E(MeV)	Avg E (MeV)	# per 100 dis
0.806	0.383	0.012

Max. Beta Range in Air : 241.48 cm

Max. Beta Range in Water : 0.26 cm

**Major Gammas:**

E(MeV)	# per 100 Dis
0.570	97.74
1.064	74.5
1.770	6.87

Average gamma E = 0.822 MeV

**Intake Data (annual):**

Minimum Ingestion: 1000  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

Minimum Inhalation: 200  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

**Doses:**

**Skin Dose:** Reported for 1  $\mu$ Ci over 10 cm<sup>2</sup> of skin  
35.2 mrad/hr (gamma dose)

Point Source: 79.8 mrad/hr (beta dose)

Disk Source: 80.1 mrad/hr (beta dose)

**Shielding Information:**

Maximum Range For Beta	Plastic	0.41 cm
	Aluminum	0.18 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	4000 $\mu$ Ci
Containers Require Labeling When Greater Than	10 $\mu$ Ci
Rooms Require Posting When There Is Greater Than	100 $\mu$ Ci
Contamination Lasting More than 24 hrs Require NRC Notification At	2000 $\mu$ Ci