RADIONUCLIDE DATA SHEET [RUTHENIUM]

Ru-103 — 44protons — 59neutrons

Half Life: 39.27 days
Radiation: Decay Mode: Beta
Gamma Constant: 3.7 mR/hr per 1 mCi at 30 cm

Major Betas:

Max E(MeV)	Avg E (MeV)	# per 100 dis
0.113	0.030	6
0.226	0.063	90
0.723	0.239	4

Max. Beta Range in Air : 270 cm
Max. Beta Range in Water : 0.29 cm

Major Gammas:

E(MeV)	# per 100 Dis
0.497	89
0.557	1
0.610	6

Average gamma E = 0.497 MeV

Intake Data (annual):

Minimum Ingestion: 2000 µCi equals 5 rem TEDE (WHOLE BODY)
Minimum Inhalation: 600 µCi equals 5 rem TEDE (WHOLE BODY)

Doses:

Skin Dose: Reported for 1 µCi over 10 cm² of skin
8.72 mrad/hr (gamma dose)
Point Source: 207 mrad/hr (beta dose)
Disk Source: 209 mrad/hr (beta dose)

Shielding Information:

Maximum Range For Beta	Plastic	0.29 cm
	Aluminum	0.14 cm
Tenth Value Thickness For Average Gamma:	Concrete	11 cm
	Lead	1.3 cm

Detection information: Usable Detectors listed with estimate efficiencies

Ludlum 3 w/ pancake probe at 1 cm	2%	Liq. Scint. Counter	85%
Ludlum 3 w/ NaI probe near surface	1%	Gamma Counter	40%

Action Quantities:

Bench Top Quantity Must Be Less Than	6000 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	3000 µCi