RADIONUCLIDE DATA SHEET
Ruthenium – 103

Ru – 103 44 protons 59 neutrons

Radiation: **Decay mode:** Beta

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 or 8.86 ft
Max. Beta Range in water 0.29 cm

Major Gammas:

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

Avg. gamma E = 0.497 MeV

Half – life: 39.27 days

Gamma constant: 3.7 mR/hr per 1 mCi at 30 cm

Radiological data:

Min. Ingestion ALI: 2000 μCi equals 5 rem TEDE (Whole Body)
Min. Inhalation ALI: 600 μCi equals 5 rem TEDE (Whole Body)

Doses:

Skin Dose: Reported for 1 μCi over 10 cm^2 of skin
8.72 mrad/hr (gamma dose)
Point Source: 207 mrad/hr (beta dose)
Disk Source: 209 mrad/hr (beta dose)

Shielding data:

Max. 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 estimated efficiencies
(Use efficiencies listed on instrument when available)

Ludlum 3 with pancake probe at 1 cm:	2 %	**Liq. Scint. Counter:**	85 %
Ludlum 3 with 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 when greater than	3000 μCi

Updated – 08/02/2005