RADIONUCLIDE DATA SHEET
Iron – 59

Fe – 59 26 protons 33 neutrons

Radiation: **Decay mode:** Beta

Major Betas:

Max E (MeV)	Avg E (MeV)	# per 100 dis
0.131	0.036	1
0.273	0.081	45
0.466	0.149	53

Max. Beta Range in air 150 cm or 4.92 ft
Max. Beta Range in water 0.16 cm

Major Gammas:

E (MeV)	# per 100 dis
0.192	3
1.099	57
1.292	43

Avg. gamma E = 1.140 MeV

Half – life: 44.51 days

Gamma constant: 7.35 mR/hr per 1 mCi at 30 cm

Radiological data:

Min. Ingestion ALI: 800 μCi equals 5 rem TEDE (Whole Body)
Min. Inhalation ALI: 300 μCi equals 5 rem TEDE (Whole Body)

Doses:

Skin Dose: Reported for 1 μCi over 10 cm^2 of skin
20.0 mrad/hr (gamma dose)
Point Source: 397 mrad/hr (beta dose)
Disk Source: 400 mrad/hr (beta dose)

Shielding data:

Max. range for beta:	Plastic	=	0.16 cm
	Aluminum	=	0.08 cm
Tenth Value Thickness for	Concrete	=	18 cm
average gamma:	Lead	=	3.1 cm

Detection Information: Usable Detectors listed with estimated efficiencies
(Use efficiencies listed on instrument when available)

Ludlum 3 with pancake probe at 1 cm:	11 %	**Liq. Scint. Counter:**	85 %
Ludlum 3 with NaI probe near surface:	1 %	**Gamma Counter:**	60 %

Action Quantities:

Bench top quantity must be less than	3000 μCi
Containers require labeling when greater than	10 μCi
Rooms require posting when there is greater than	100 μCi
Contamination lasting more than 24 hrs require NRC notification when greater than	1500 μCi

Updated – 08/02/2005