



# RADIONUCLIDE DATA SHEET

## Technetium – 99m



**Tc – 99m**    43 protons    56 neutrons

**Radiation:**      **Decay mode:** Isomeric Transition

**Major Betas:**

Max E (MeV)	Avg E (MeV)	# per 100 dis
None		

Max. Beta Range in air            N/A  
 Max. Beta Range in water        N/A

**Major Gammas:**

E (MeV)	# per 100 dis
0.141	89

**Avg. gamma E =**    0.131 MeV

**Half – life:**                    6.01 hours                    or    0.25 days

**Gamma constant:**    1.36 mR/hr per 1 mCi at 30 cm

**Radiological data:**

**Min. Ingestion ALI:**    80000 µCi equals 5 rem TEDE (Whole Body)  
**Min. Inhalation ALI:**    200000 µCi equals 5 rem TEDE (Whole Body)

**Doses:**

**Skin Dose:**                    Reported for 1 µCi over 10 cm<sup>2</sup> of skin  
    4.27 mrad/hr (gamma dose)  
**Point Source:**    0 mrad/hr (beta dose)  
**Disk Source:**        0 mrad/hr (beta dose)

**Shielding data:**

<b>Max. range for beta:</b>	Plastic	=	0 cm
	Aluminum	=	0 cm
<b>Tenth Value Thickness for average gamma:</b>	Concrete	=	6.7 cm
	Lead	=	0.08 cm

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

<b>Ludlum 3 with pancake probe at 1 cm:</b>	1 %	<b>Liq. Scint. Counter:</b>	70 %
<b>Ludlum 3 with NaI probe near surface:</b>	3 %	<b>Gamma Counter:</b>	70 %

**Action Quantities:**

Bench top quantity must be less than	800000 µCi
Containers require labeling when greater than	1000 µCi
Rooms require posting when there is greater than	10000 µCi
Contamination lasting more than 24 hrs require NRC notification when greater than	400000 µCi