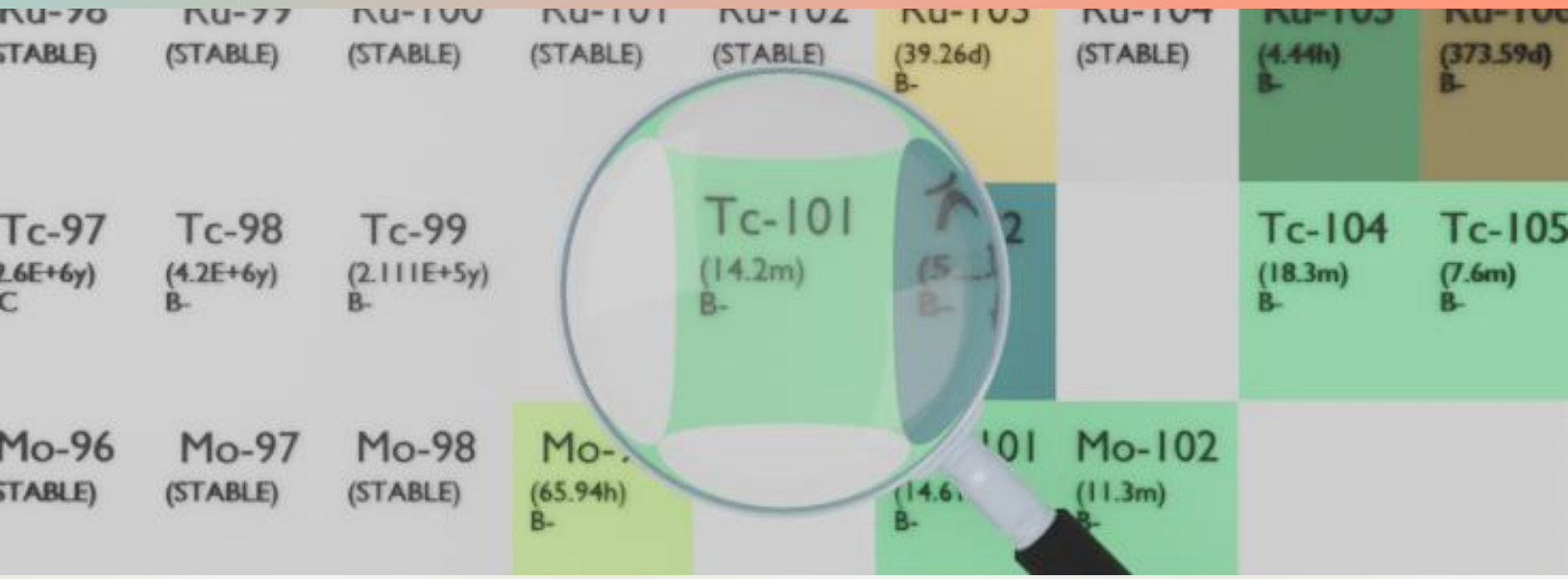


TECHNETIUM-101

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tc-101
Atomic number (Z): 43
Mass number (A): 101
Neutron number (N): 58

RADIOACTIVE DECAY

Decay modes: β-
Half-life: 14.2 [m]
Decay constant: 8.1355e-04 [1/s]
Daughters: Ru-101 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

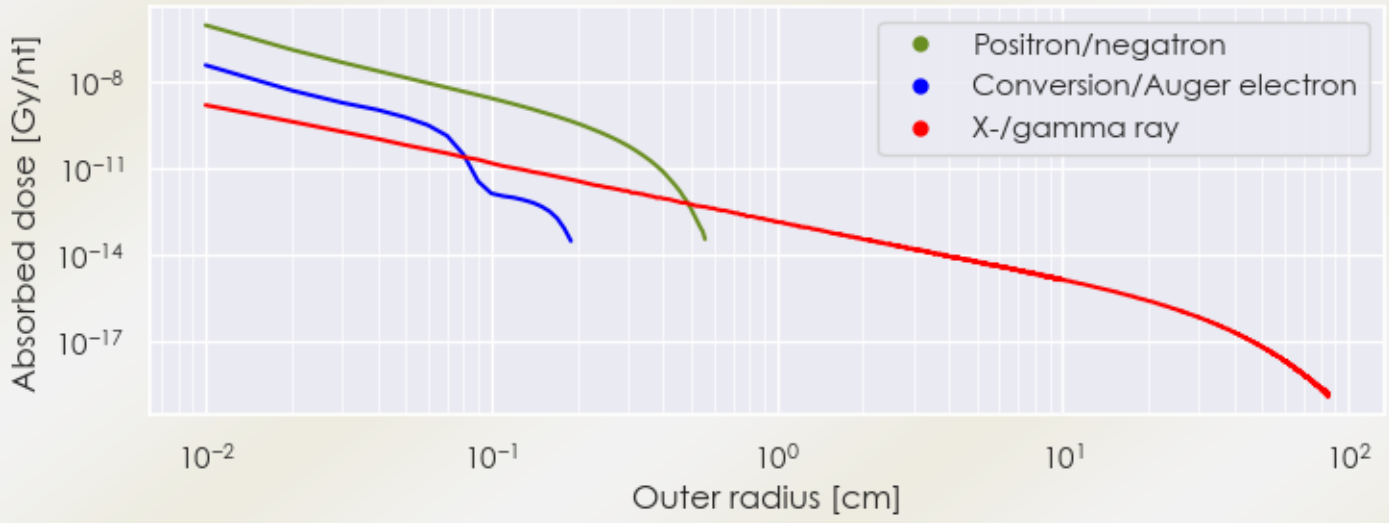
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.47245 [MeV]
Mean photon energy: 0.33672 [MeV]
Air kerma rate constant, Γ_{10}: 1.259e-17 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 1.259e-17 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 7.569e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}: 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 7.569e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 5.395e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

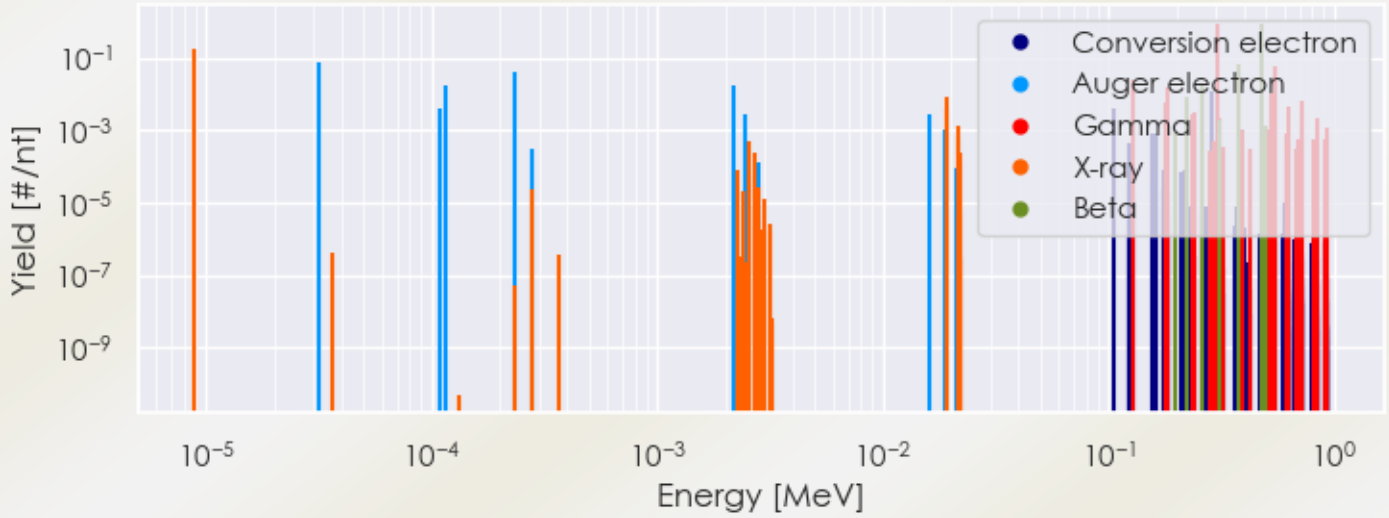
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tc-101 DPK.csv

SUMMARY SPECTRA (PLOT)

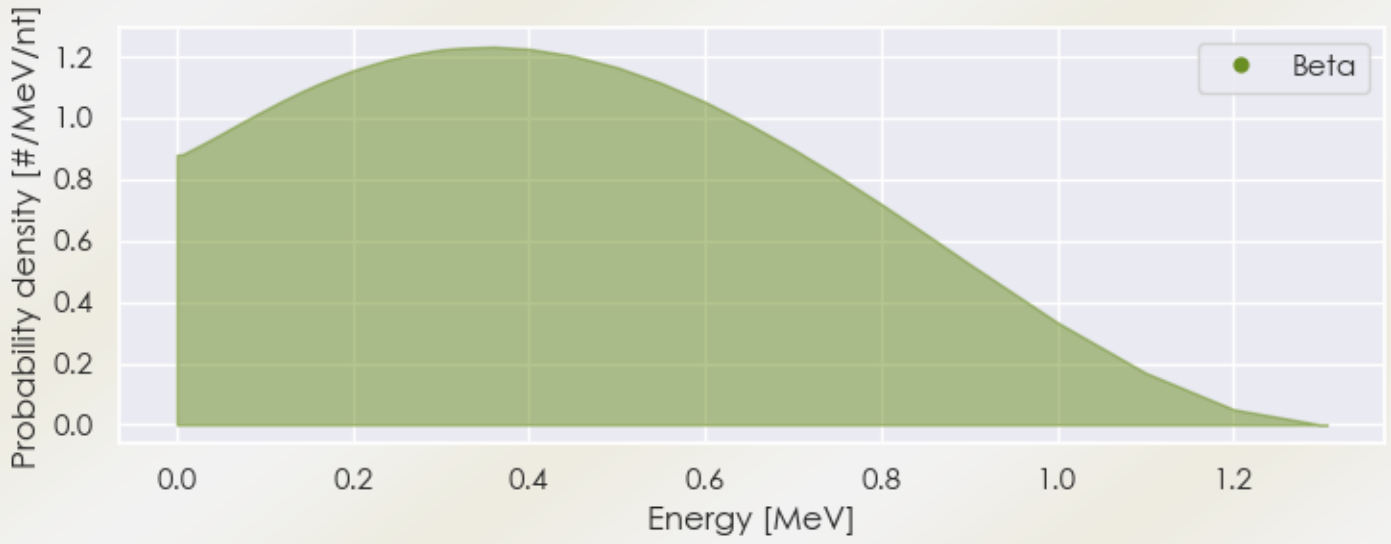
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tc-101 Summary Spectrum.csv

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/Tc-101 Beta Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tc-101 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
8.90936e-06	1.862e-01	X-ray
1.27220e-01	2.626e-02	Gamma
1.84120e-01	1.597e-02	Gamma
3.06830e-01	8.870e-01	Gamma
5.31420e-01	1.002e-02	Gamma
5.45050e-01	5.961e-02	Gamma
2.58048e-01	1.906e-02	Beta
3.79721e-01	6.428e-02	Beta
4.81558e-01	9.013e-01	Beta
3.14573e-05	7.718e-02	Auger electron

1.14365e-04	1.745e-02	Auger electron
2.31869e-04	4.278e-02	Auger electron
2.15877e-03	1.675e-02	Auger electron
2.84743e-01	1.229e-02	Conversion electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): https://www.nndc.bnl.gov/nudat3/mird/

International Atomic Energy Agency (IAEA) Livechart: https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html

REFERENCE LINKS

ICRP Report 107: https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107

Graves et al. Dose Point Kernels: https://doi.org/10.1002/mp.13789

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6