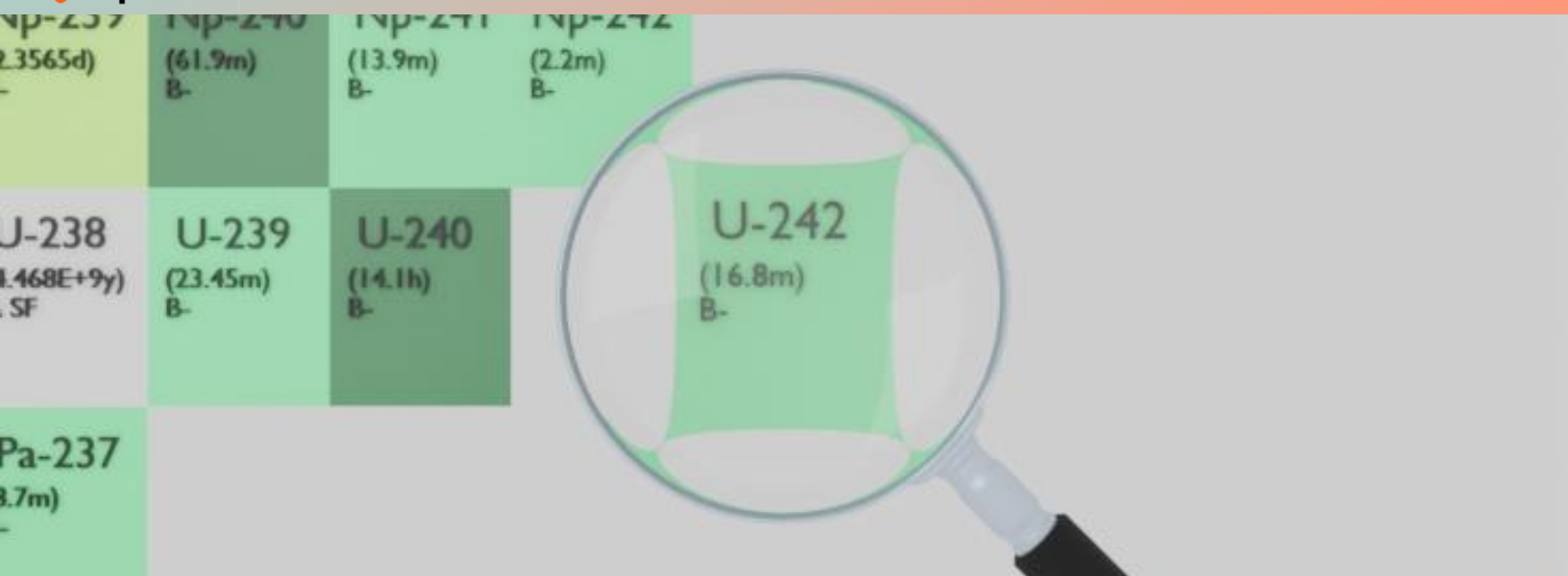




URANIUM-242

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: U-242
Atomic number (Z): 92
Mass number (A): 242
Neutron number (N): 150

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 16.8 [m]
Decay constant: 6.8765×10^{-4} [1/s]
Daughters: Np-242 (100.0%)
Radioactive daughters: Np-242

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.38592 [MeV]
Mean photon energy: 0.04129 [MeV]
Air kerma rate constant, Γ_{10} : 2.162×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 2.162×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.183×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

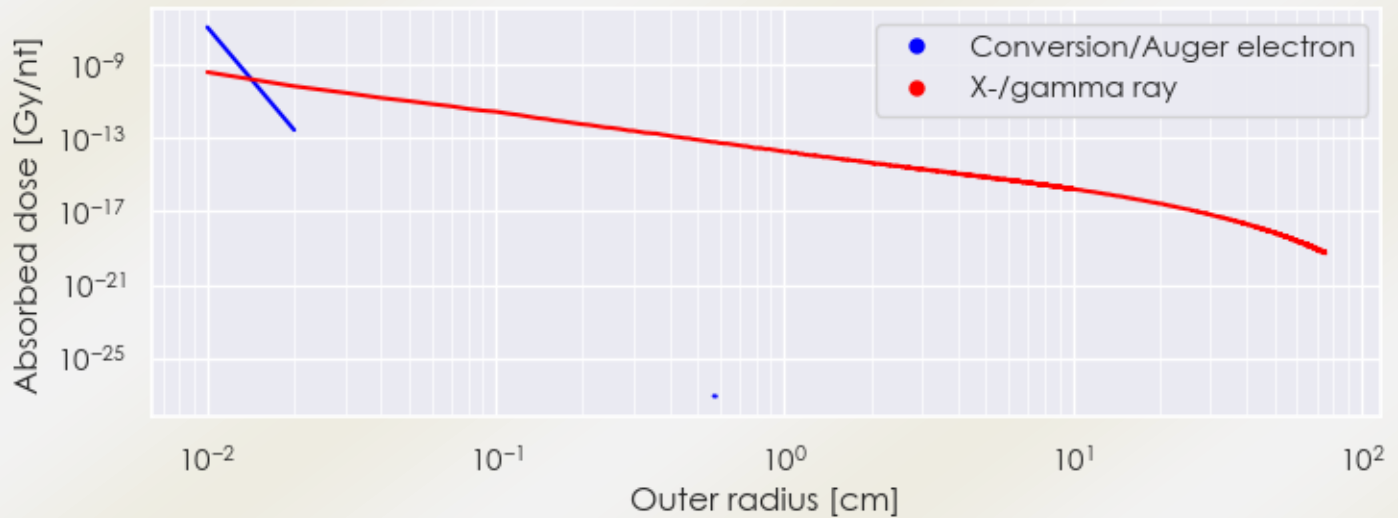
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 6.183×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 6.615×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

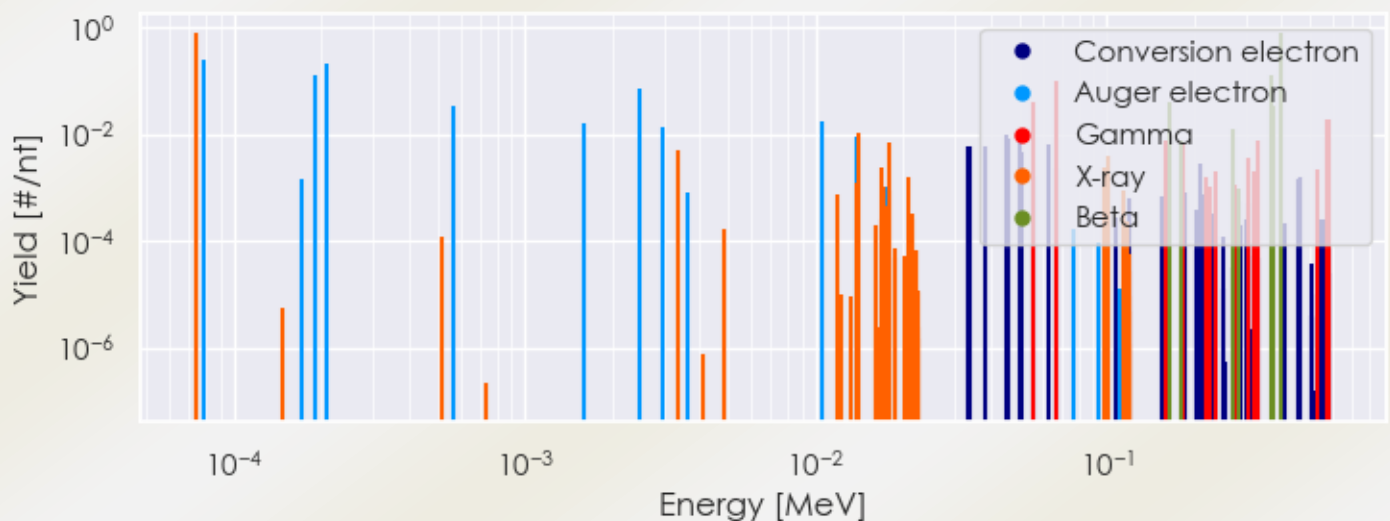
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/U-242 DPK.csv

SUMMARY SPECTRA (PLOT)

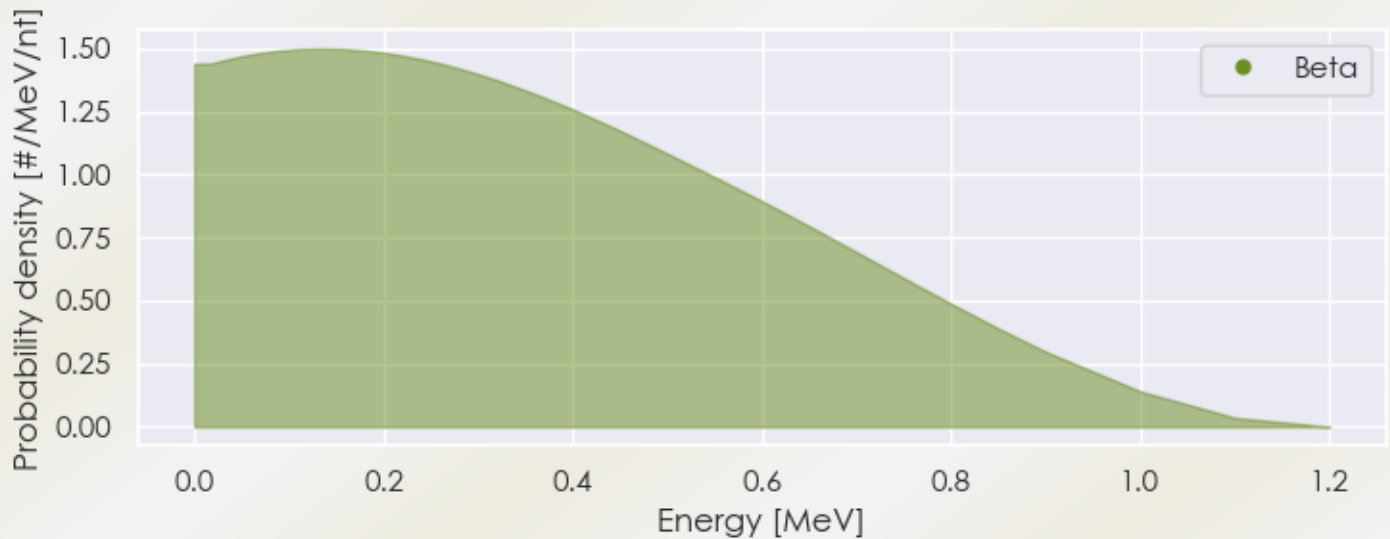
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/U-242 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/U-242 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/U-242 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.44458e-05	8.090e-01	X-ray
1.39579e-02	1.083e-02	X-ray
5.55800e-02	3.909e-02	Gamma
6.76000e-02	9.521e-02	Gamma
5.72900e-01	1.873e-02	Gamma
5.85000e-01	1.927e-02	Gamma
1.65685e-01	4.122e-02	Beta
2.73503e-01	1.276e-02	Beta
3.69769e-01	1.276e-01	Beta
3.74276e-01	3.435e-02	Beta

3.95208e-01	7.753e-01	Beta
7.89977e-05	2.365e-01	Auger electron
1.90377e-04	1.234e-01	Auger electron
2.08842e-04	2.127e-01	Auger electron
5.66933e-04	3.300e-02	Auger electron
1.59387e-03	1.649e-02	Auger electron
2.49046e-03	6.983e-02	Auger electron
2.99032e-03	1.366e-02	Auger electron
1.04517e-02	1.691e-02	Auger 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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6