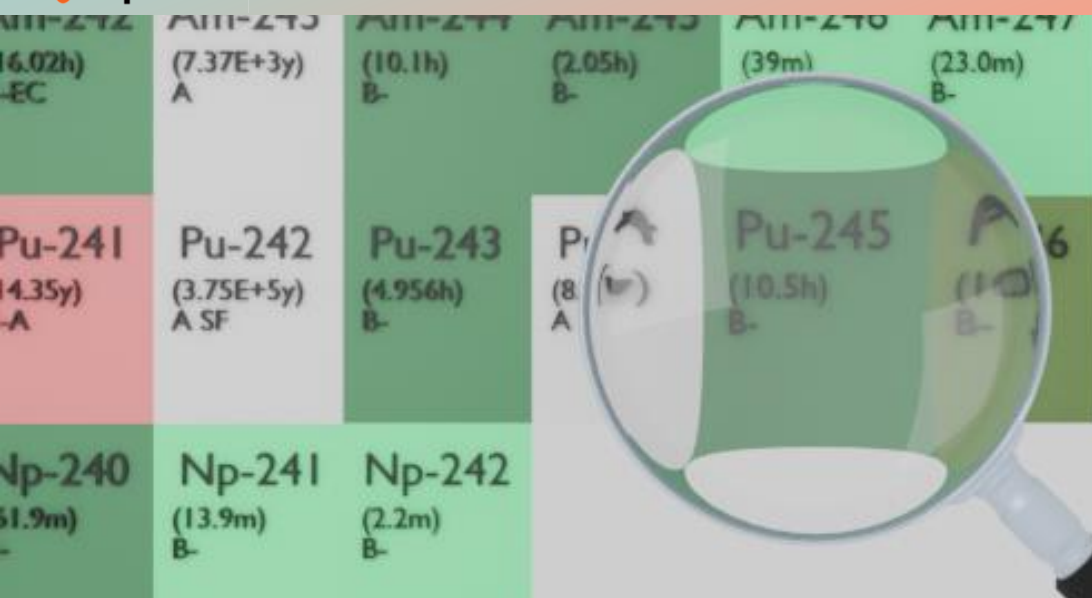




PLUTONIUM-245

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pu-245
Atomic number (Z): 94
Mass number (A): 245
Neutron number (N): 151

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 10.5 [h]
Decay constant: 1.8337×10^{-5} [1/s]
Daughters: Am-245 (100.0%)
Radioactive daughters: Am-245

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.31904 [MeV]
Mean photon energy: 0.40268 [MeV]
Air kerma rate constant, Γ_{10} : 1.799×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.799×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.112×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

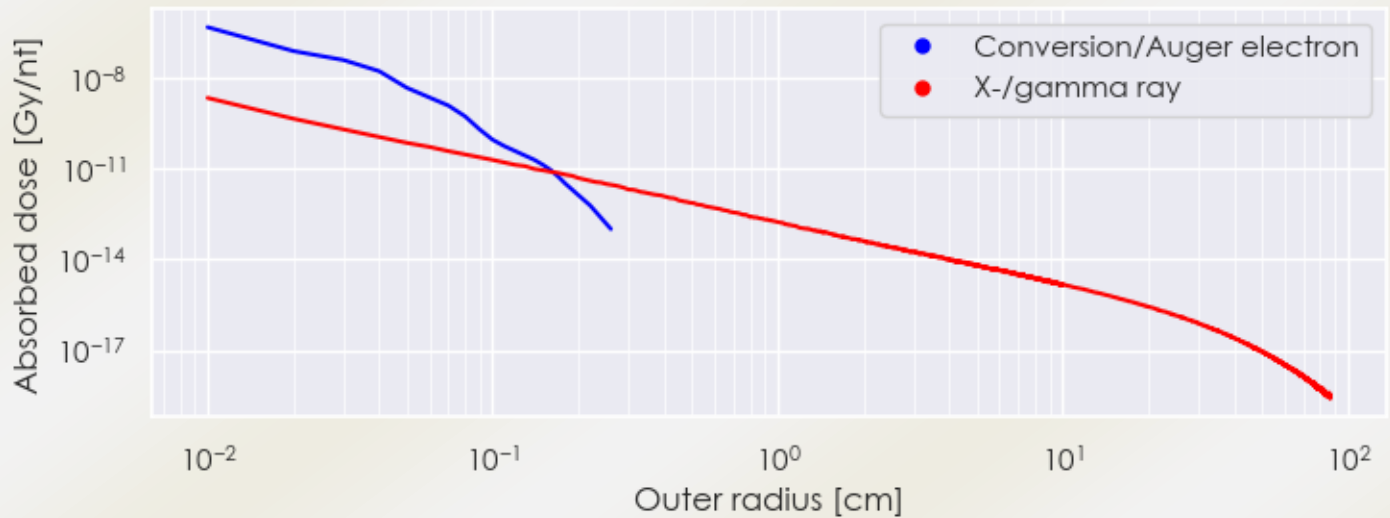
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.112×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 6.452×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

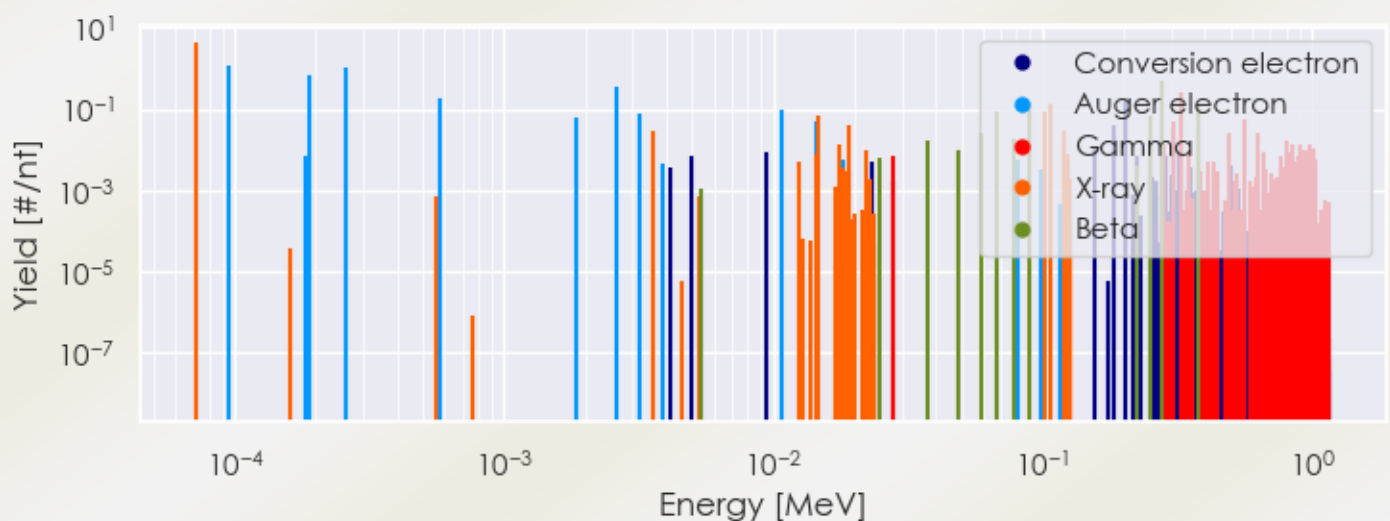
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pu-245 DPK.csv

SUMMARY SPECTRA (PLOT)

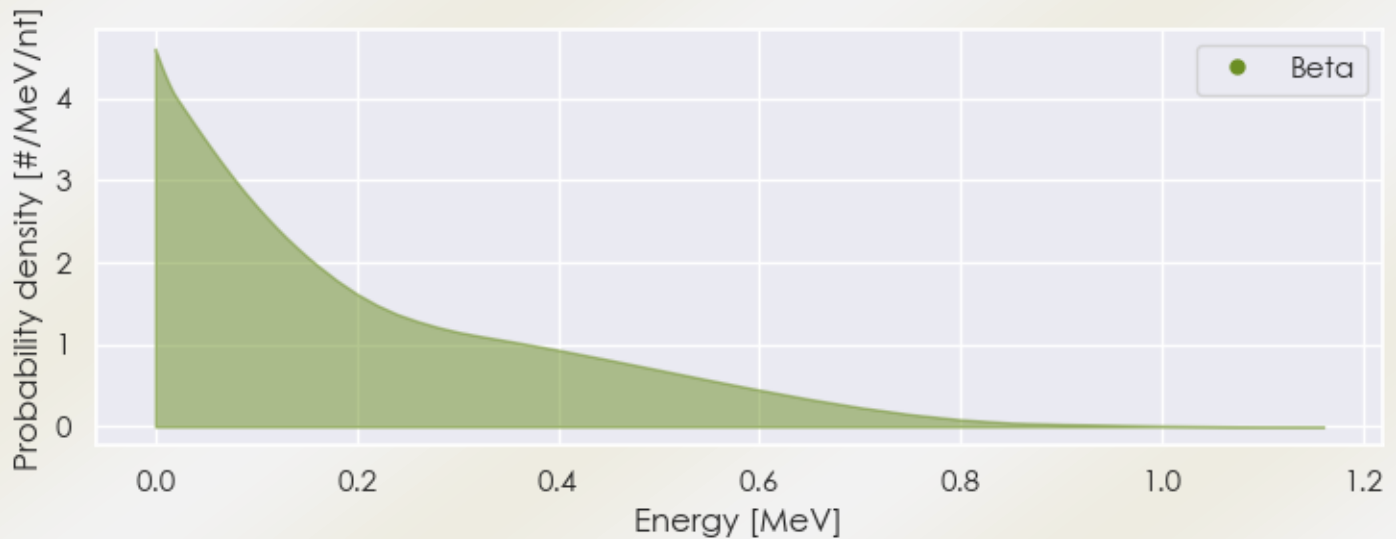
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pu-245 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/Pu-245 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/Pu-245 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.21594e-05	4.142e+00	X-ray
3.54497e-03	2.828e-02	X-ray
1.46345e-02	6.564e-02	X-ray
1.77003e-02	1.406e-02	X-ray
1.89584e-02	4.022e-02	X-ray
1.02508e-01	8.191e-02	X-ray
1.07043e-01	1.289e-01	X-ray
1.19828e-01	1.499e-02	X-ray
1.20885e-01	2.945e-02	X-ray
2.80385e-01	1.284e-02	Gamma

3.08222e-01	4.901e-02	Gamma
3.27428e-01	2.535e-01	Gamma
3.76676e-01	3.211e-02	Gamma
4.91591e-01	2.704e-02	Gamma
5.60130e-01	5.408e-02	Gamma
6.30102e-01	2.704e-02	Gamma
7.99870e-01	1.572e-02	Gamma
8.40560e-01	1.284e-02	Gamma
9.10460e-01	1.386e-02	Gamma
9.38400e-01	1.014e-02	Gamma
9.87600e-01	1.318e-02	Gamma
1.01833e+00	1.031e-02	Gamma
3.72945e-02	1.594e-02	Beta
5.92914e-02	2.690e-02	Beta
6.80268e-02	8.269e-02	Beta
7.88503e-02	1.893e-02	Beta
8.89426e-02	1.395e-01	Beta
2.51340e-01	6.675e-02	Beta
2.75631e-01	5.081e-01	Beta
3.78139e-01	1.196e-01	Beta
9.53104e-05	1.159e+00	Auger electron
1.89754e-04	6.404e-01	Auger electron
2.58445e-04	1.088e+00	Auger electron
5.73430e-04	1.740e-01	Auger electron
1.84837e-03	6.230e-02	Auger electron
2.60850e-03	3.564e-01	Auger electron
3.16928e-03	7.598e-02	Auger electron
1.07811e-02	9.020e-02	Auger electron
1.44236e-02	4.716e-02	Auger electron
1.54815e-01	1.162e-02	Conversion electron
1.82652e-01	3.879e-02	Conversion electron
2.01858e-01	1.835e-01	Conversion electron
2.51106e-01	1.942e-02	Conversion electron
3.03601e-01	3.257e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6