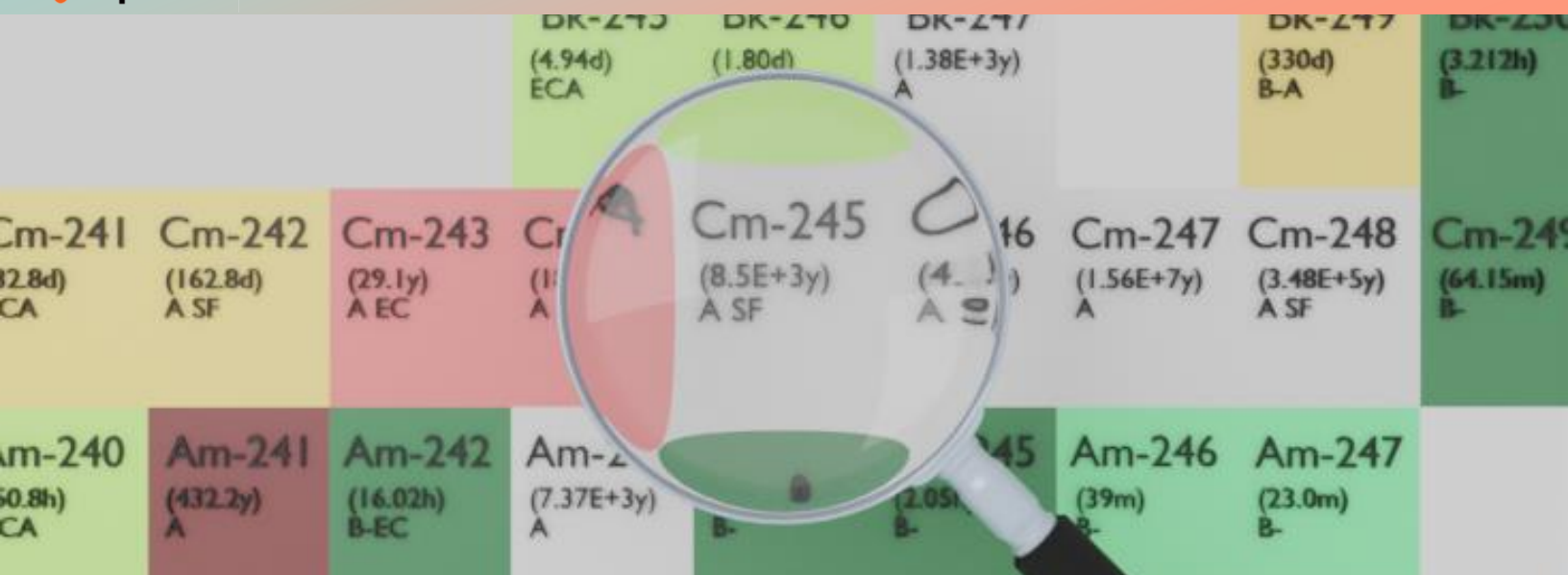




CURIUM-245

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cm-245
Atomic number (Z): 96
Mass number (A): 245
Neutron number (N): 149

RADIOACTIVE DECAY

Decay modes: α , Spontaneous fission
Half-life: 8500.0 [y]
Decay constant: 2.5841×10^{-12} [1/s]
Daughters: Pu-241 (100.0%), SF ($6.1 \times 10^{-7}\%$)
Radioactive daughters: Pu-241

DOSIMETRIC CONSTANTS

Mean alpha energy: 5.4473 [MeV]
Mean electron energy: 0.08239 [MeV]
Mean photon energy: 0.1084 [MeV]
Air kerma rate constant, Γ_{10} : 1.541×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.541×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 8.860×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 8.728×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]

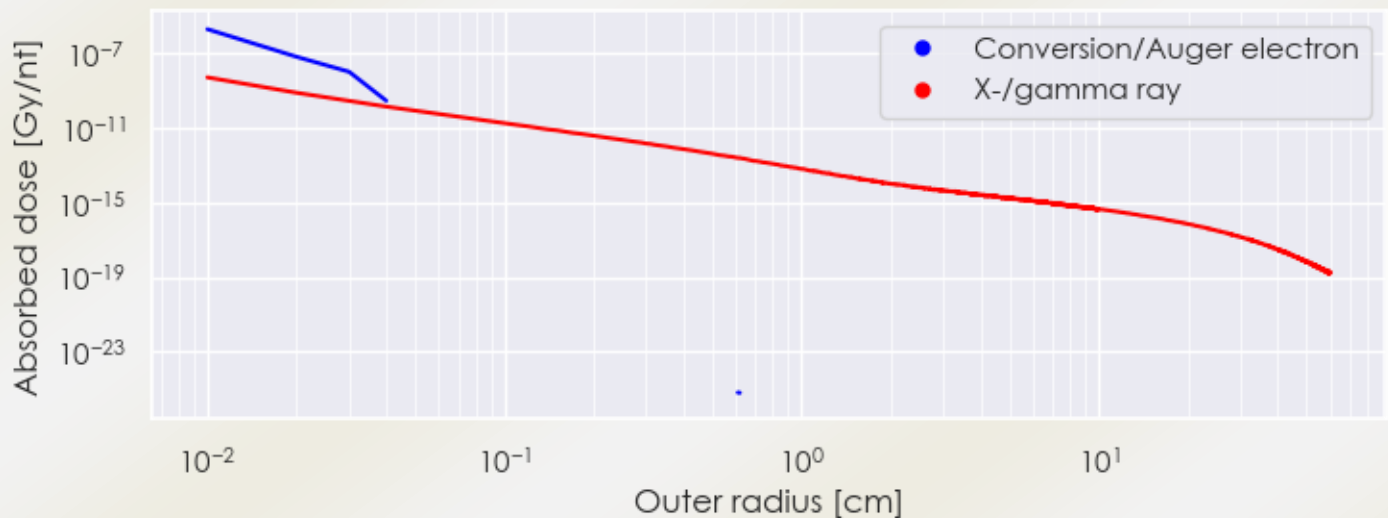
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.320×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.737×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

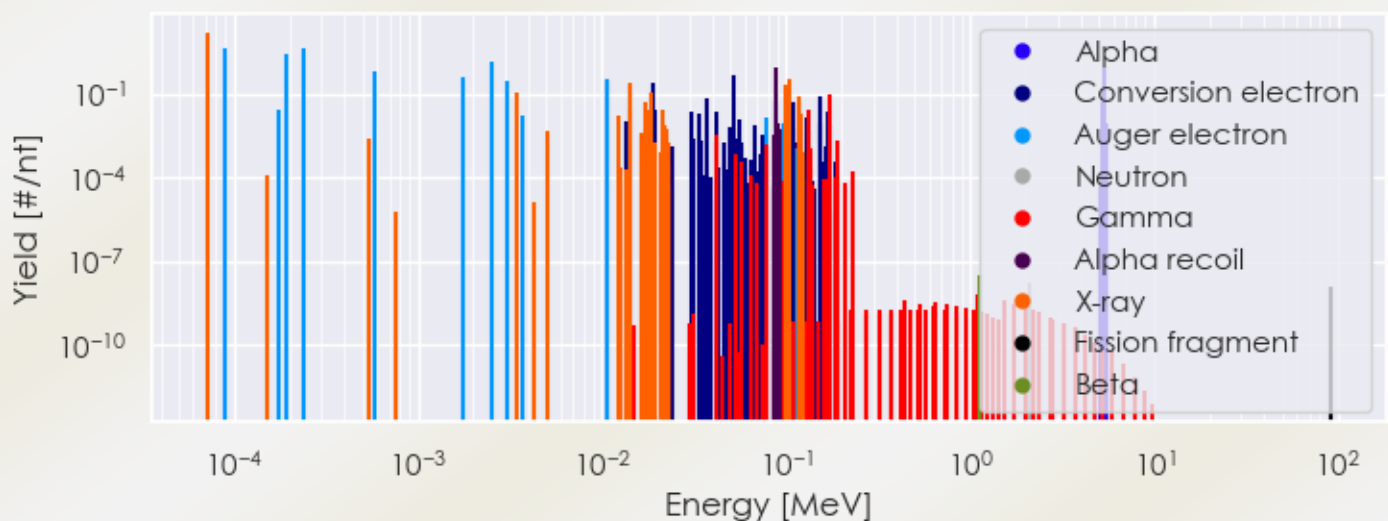
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

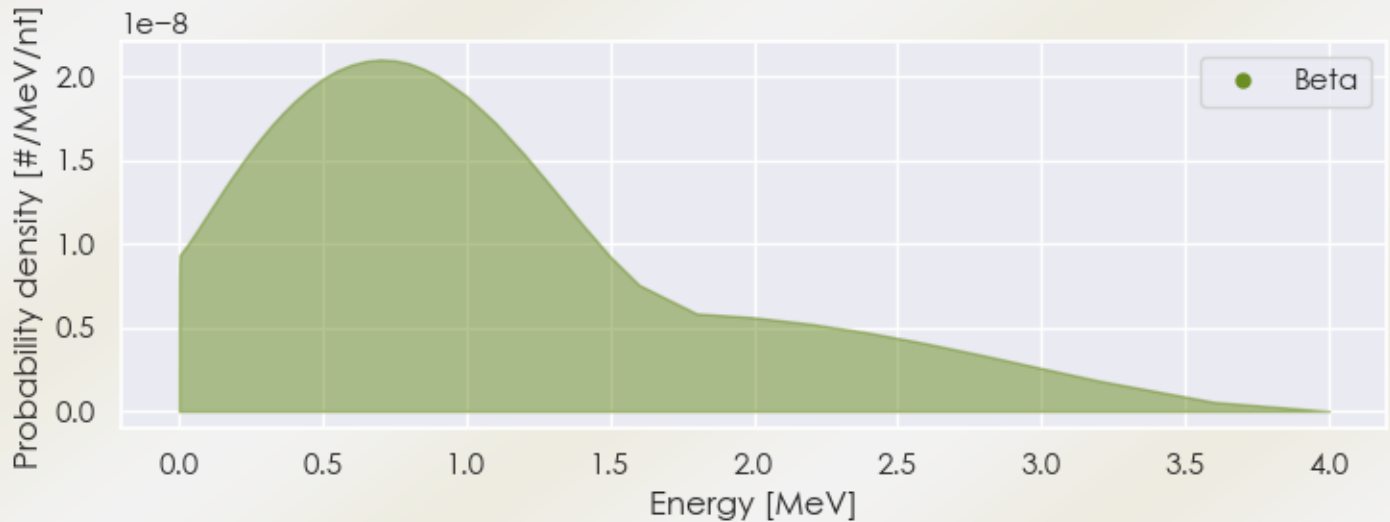
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.19686e-05	1.598e+01	X-ray
3.44493e-03	1.037e-01	X-ray
1.21689e-02	1.614e-02	X-ray
1.40932e-02	2.565e-02	X-ray
1.42941e-02	2.252e-01	X-ray
1.72768e-02	4.791e-02	X-ray
1.75735e-02	2.654e-02	X-ray
1.83932e-02	1.108e-01	X-ray
1.85721e-02	2.182e-02	X-ray

2.15285e-02	2.558e-02	X-ray
9.99790e-02	2.164e-01	X-ray
1.04279e-01	3.425e-01	X-ray
1.16802e-01	3.972e-02	X-ray
1.17801e-01	7.791e-02	X-ray
1.20980e-01	1.001e-02	X-ray
1.21244e-01	2.039e-02	X-ray
1.32990e-01	2.774e-02	Gamma
1.74940e-01	9.500e-02	Gamma
8.90532e-05	4.390e+00	Auger electron
1.76257e-04	2.761e-02	Auger electron
1.92206e-04	2.452e+00	Auger electron
2.36699e-04	4.193e+00	Auger electron
5.83521e-04	6.704e-01	Auger electron
1.77220e-03	3.676e-01	Auger electron
2.55082e-03	1.362e+00	Auger electron
3.08202e-03	2.786e-01	Auger electron
3.73898e-03	1.672e-02	Auger electron
1.06334e-02	3.290e-01	Auger electron
1.06400e-02	2.822e-01	Conversion electron
1.37100e-02	1.066e-02	Conversion electron
1.41780e-02	1.705e-01	Auger electron
1.77649e-02	2.076e-02	Auger electron
1.88280e-02	2.377e-01	Conversion electron
1.95790e-02	2.572e-02	Conversion electron
3.06180e-02	2.419e-02	Conversion electron
3.36880e-02	1.848e-02	Conversion electron
3.74001e-02	6.473e-02	Conversion electron
4.19500e-02	2.362e-02	Conversion electron
5.25900e-02	4.430e-01	Conversion electron
5.61280e-02	1.209e-02	Conversion electron
7.91086e-02	1.430e-02	Auger electron
1.09868e-01	5.015e-02	Conversion electron
1.28440e-01	1.363e-02	Conversion electron
1.51818e-01	7.836e-02	Conversion electron
1.70390e-01	2.135e-02	Conversion electron
5.30366e+00	4.984e-02	Alpha
5.35955e+00	9.290e-01	Alpha

8.80847e-02	4.984e-02	Alpha recoil
8.90130e-02	9.290e-01	Alpha recoil

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