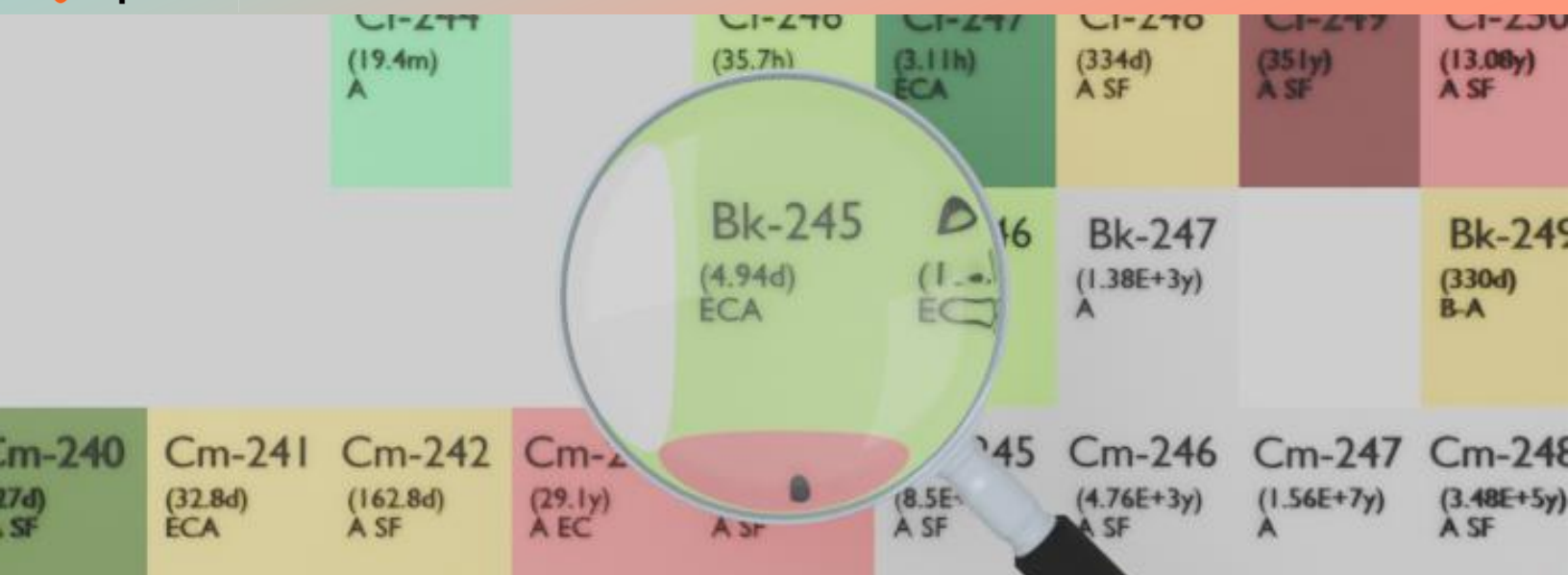




BERKELIUM-245

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Bk-245
Atomic number (Z): 97
Mass number (A): 245
Neutron number (N): 148

RADIOACTIVE DECAY

Decay modes: α , Electron capture
Half-life: 4.94 [d]
Decay constant: 1.6240×10^{-6} [1/s]
Daughters: Cm-245 (99.9%), Am-241 (0.12%)
Radioactive daughters: Cm-245, Am-241

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0074 [MeV]
Mean electron energy: 0.13255 [MeV]
Mean photon energy: 0.23518 [MeV]
Air kerma rate constant, Γ_{10} : 2.206×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 2.206×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.242×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 1.186×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]

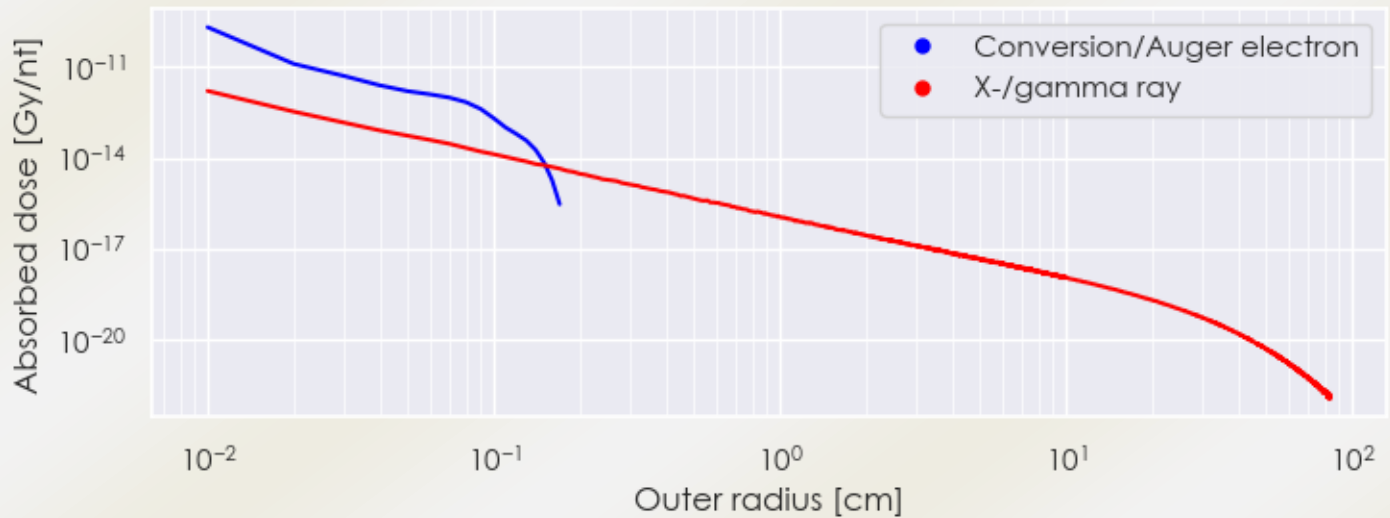
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.124×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.768×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

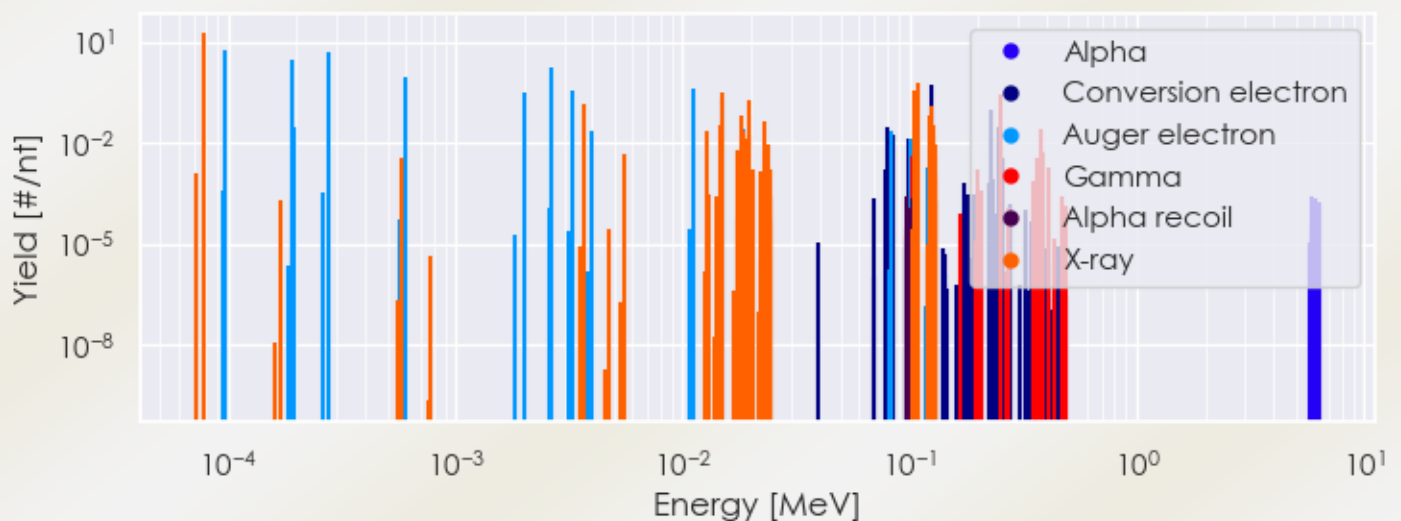
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Bk-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/Bk-245 Summary 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/Bk-245 Summary Spectrum.csv

Energy [MeV]	Yield [# / n ^t] if > 0.01	Radiation type
7.75812e-05	1.906e+01	X-ray
3.64812e-03	1.336e-01	X-ray
1.26809e-02	2.198e-02	X-ray
1.47568e-02	3.387e-02	X-ray
1.49784e-02	2.974e-01	X-ray
1.81285e-02	6.414e-02	X-ray
1.86084e-02	2.273e-02	X-ray
1.88687e-02	1.295e-02	X-ray
1.95388e-02	1.790e-01	X-ray
1.97249e-02	1.758e-02	X-ray
2.28564e-02	4.204e-02	X-ray
1.05084e-01	3.596e-01	X-ray
1.09866e-01	5.629e-01	X-ray
1.22914e-01	6.561e-02	X-ray
1.24031e-01	1.292e-01	X-ray
1.27367e-01	1.663e-02	X-ray
1.27666e-01	3.420e-02	X-ray
2.52850e-01	2.865e-01	Gamma
3.80800e-01	2.397e-02	Gamma
9.70275e-05	5.408e+00	Auger electron
1.91835e-04	2.836e+00	Auger electron
1.92805e-04	2.969e-02	Auger electron
2.78318e-04	5.009e+00	Auger electron
5.96272e-04	8.354e-01	Auger electron
2.02734e-03	3.226e-01	Auger electron
2.66373e-03	1.620e+00	Auger electron
3.25584e-03	3.581e-01	Auger electron

3.96137e-03	2.250e-02	Auger electron
1.10592e-02	4.005e-01	Auger electron
1.48190e-02	2.115e-01	Auger electron
1.86188e-02	2.620e-02	Auger electron
7.93240e-02	2.777e-02	Conversion electron
8.29001e-02	2.270e-02	Auger electron
8.41060e-02	1.739e-02	Conversion electron
9.82710e-02	1.314e-02	Conversion electron
1.01252e-01	1.318e-02	Auger electron
1.23990e-01	5.564e-01	Conversion electron
2.28296e-01	9.978e-02	Conversion electron
2.29074e-01	1.253e-02	Conversion electron
2.48021e-01	2.746e-02	Conversion electron
2.52850e-01	1.046e-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