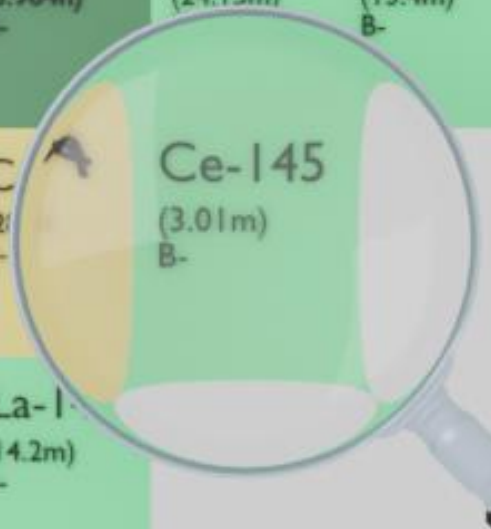




Pr-142 (9.12h) EC	Pr-143 (13.57d) B-	Pr-144 (17.28m) B-	Pr-145 (5.984h) B-	Pr-146 (24.15m) B-	Pr-147 (13.4m) B-	Pr-148 (2.29m) B-
Ce-141 (12.508d) B-	Ce-142 (STABLE)	Ce-143 (33.039h) B-	Ce-145 (3.01m) B-			
La-140 (1.6781d) B-	La-141 (3.92h) B-	La-142 (91.1m) B-	La-143 (14.2m) B-			

CERIUM-145

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ce-145
Atomic number (Z): 58
Mass number (A): 145
Neutron number (N): 87

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 3.01 [m]
Decay constant: 3.8380×10^{-3} [1/s]
Daughters: Pr-145 (100.0%)
Radioactive daughters: Pr-145

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.67942 [MeV]
Mean photon energy: 0.81424 [MeV]
Air kerma rate constant, Γ_{10} : 3.229×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.229×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.089×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

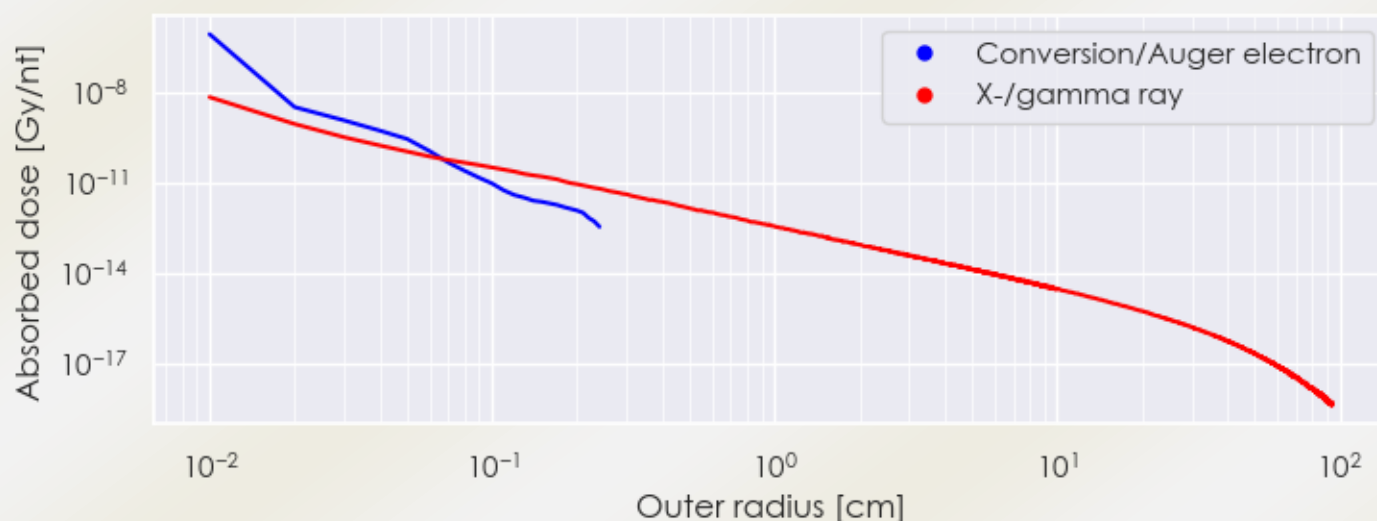
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.089×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.305×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

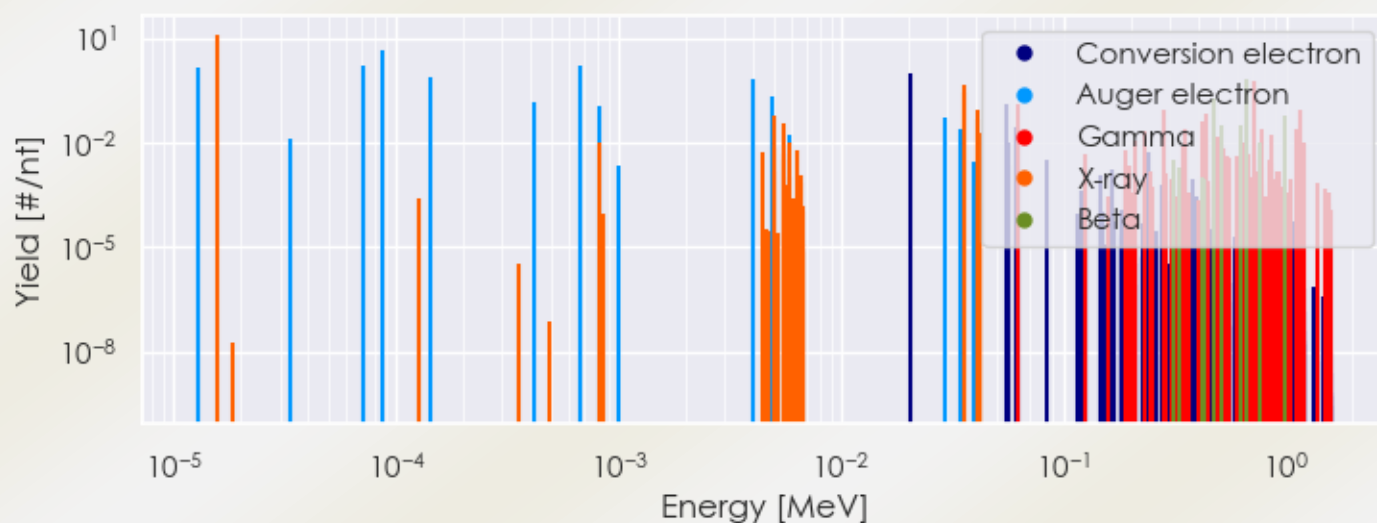
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ce-145 DPK.csv

SUMMARY SPECTRA (PLOT)

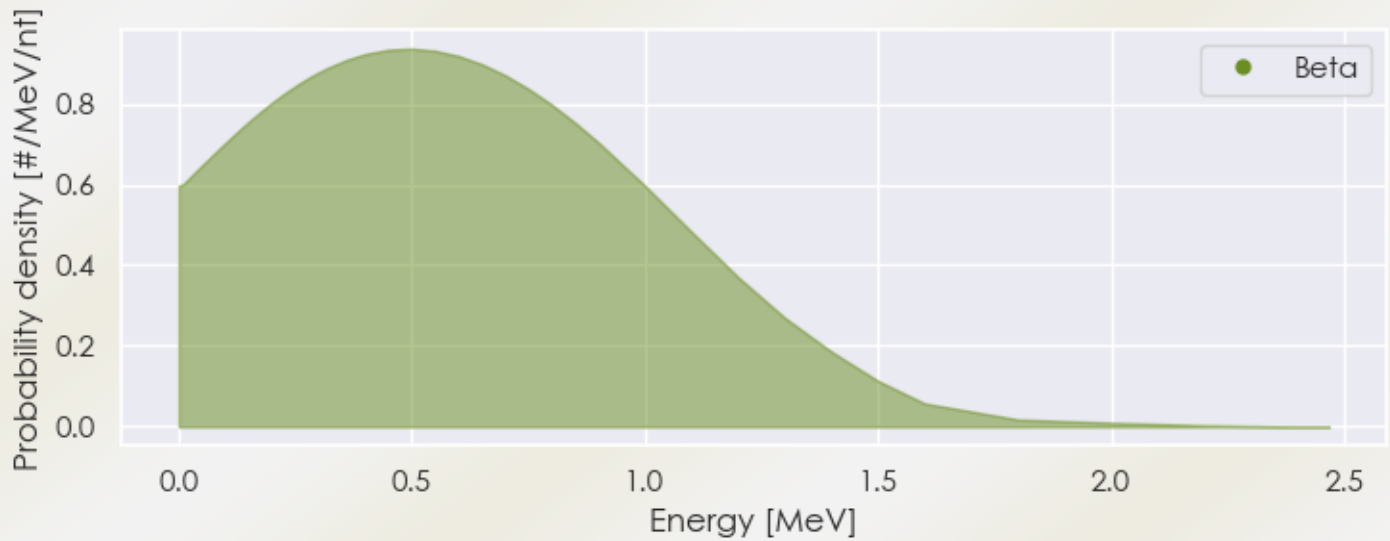
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ce-145 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/Ce-145 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/Ce-145 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.56196e-05	1.291e+01	X-ray
5.01953e-03	5.772e-02	X-ray
5.48692e-03	3.551e-02	X-ray
3.55671e-02	2.605e-01	X-ray
3.60557e-02	4.757e-01	X-ray
4.06843e-02	4.662e-02	X-ray
4.07816e-02	9.026e-02	X-ray
4.17904e-02	1.938e-02	X-ray
6.25400e-02	1.333e-01	Gamma
2.07610e-01	1.086e-02	Gamma

2.32080e-01	2.036e-02	Gamma
2.84530e-01	8.142e-02	Gamma
3.50900e-01	2.537e-02	Gamma
4.23600e-01	3.835e-02	Gamma
4.35990e-01	1.209e-02	Gamma
4.39710e-01	6.726e-02	Gamma
4.92210e-01	1.475e-02	Gamma
7.24330e-01	5.900e-01	Gamma
7.83090e-01	2.348e-02	Gamma
8.59610e-01	1.652e-02	Gamma
1.11068e+00	2.472e-02	Gamma
1.14803e+00	9.145e-02	Gamma
4.74227e-01	1.882e-01	Beta
5.16759e-01	3.052e-02	Beta
6.31298e-01	3.154e-02	Beta
6.57198e-01	6.715e-01	Beta
7.66468e-01	1.017e-02	Beta
9.81650e-01	6.105e-02	Beta
1.29601e-05	1.509e+00	Auger electron
3.35200e-05	1.225e-02	Auger electron
7.04282e-05	1.613e+00	Auger electron
8.72055e-05	4.533e+00	Auger electron
1.42960e-04	7.145e-01	Auger electron
4.13467e-04	1.487e-01	Auger electron
6.67520e-04	1.672e+00	Auger electron
8.25527e-04	1.183e-01	Auger electron
3.99592e-03	6.409e-01	Auger electron
4.89904e-03	2.134e-01	Auger electron
5.83532e-03	1.749e-02	Auger electron
2.05300e-02	9.740e-01	Conversion electron
2.93378e-02	5.308e-02	Auger electron
3.45832e-02	2.524e-02	Auger electron
5.57402e-02	1.238e-01	Conversion electron
5.60971e-02	1.004e-02	Conversion electron
6.13116e-02	2.875e-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