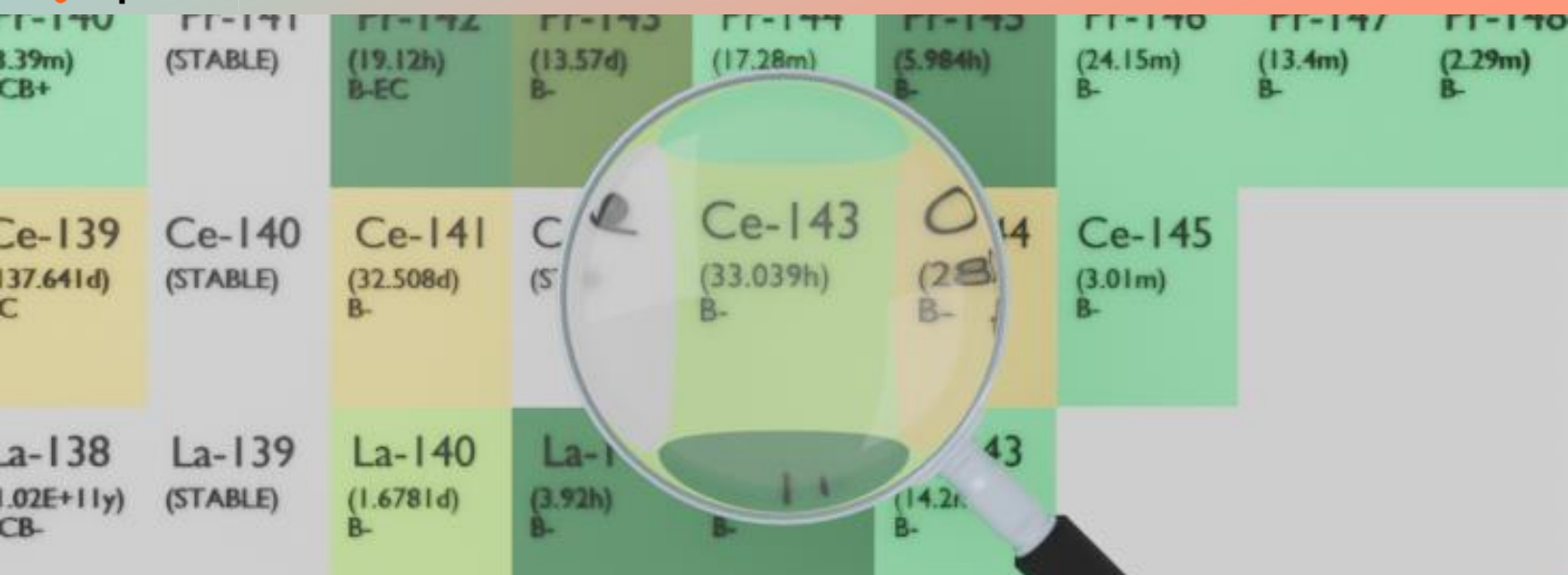




CERIUM-143

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ce-143
Atomic number (Z): 58
Mass number (A): 143
Neutron number (N): 85

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 33.04 [h]
Decay constant: 5.8277e-06 [1/s]
Daughters: Pr-143 (100.0%)
Radioactive daughters: Pr-143

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.43636 [MeV]
Mean photon energy: 0.27958 [MeV]
Air kerma rate constant, Γ_{10} : 1.199e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 1.199e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.991e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

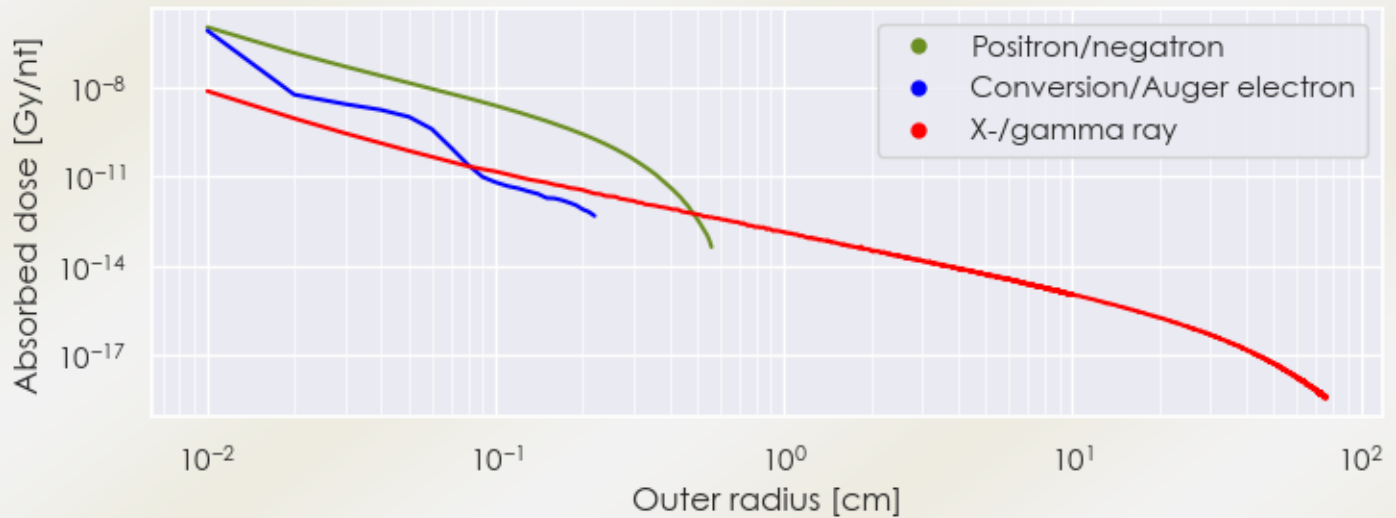
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e-}$: 6.991×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.479×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

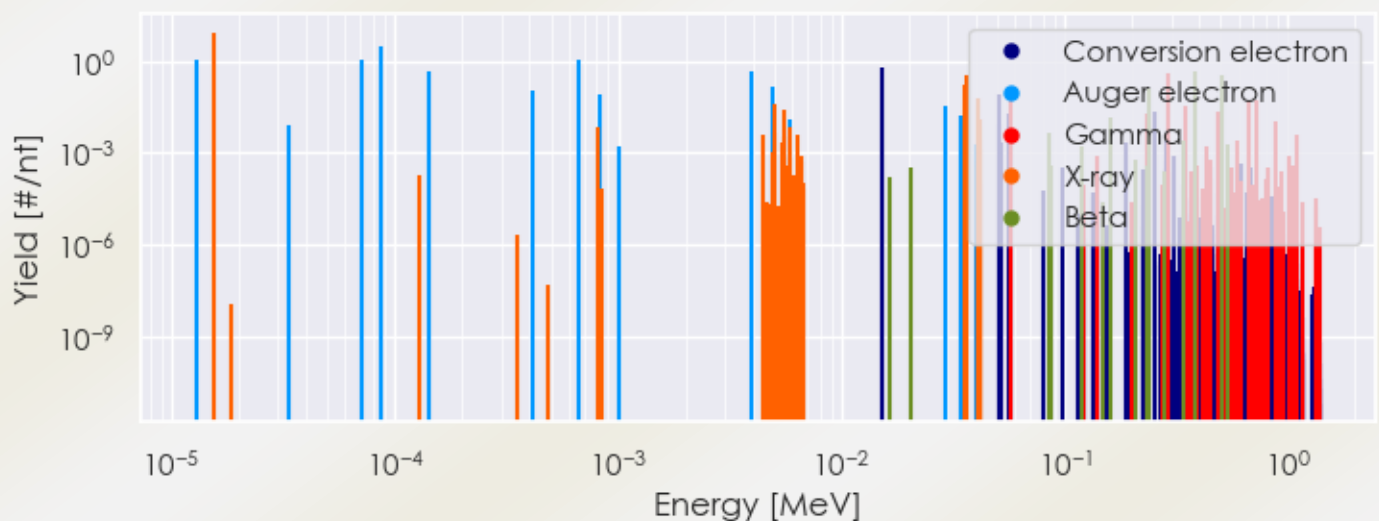
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ce-143 DPK.csv

SUMMARY SPECTRA (PLOT)

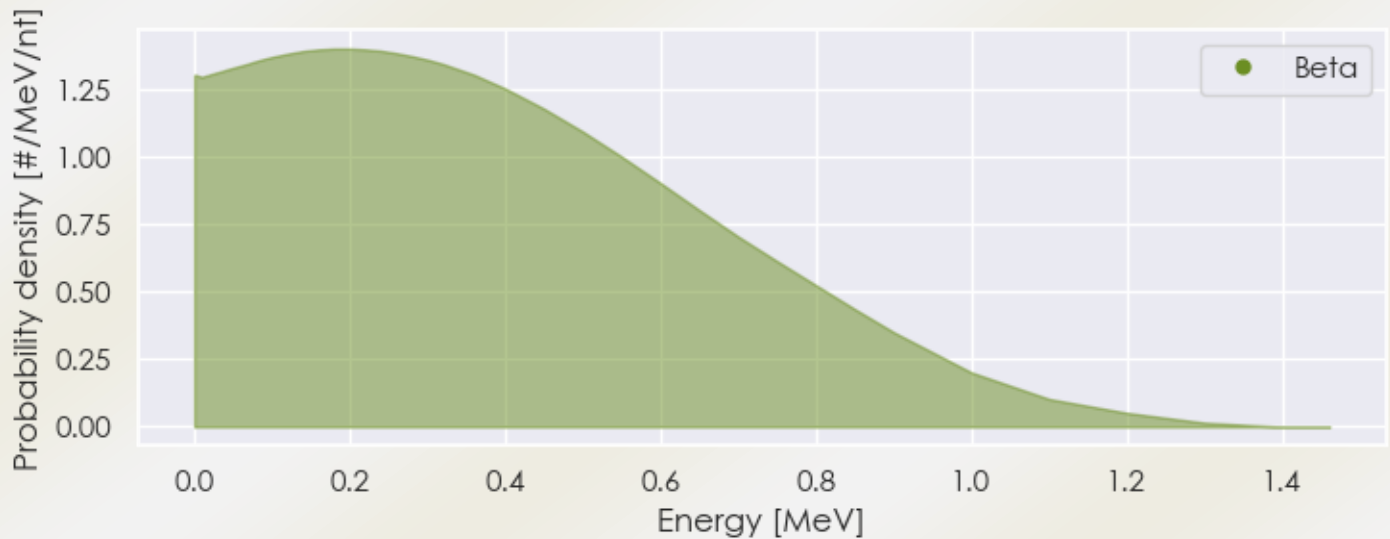
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ce-143 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-143 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-143 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.56197e-05	8.992e+00	X-ray
5.01953e-03	4.021e-02	X-ray
5.48692e-03	2.477e-02	X-ray
3.55671e-02	1.810e-01	X-ray
3.60557e-02	3.305e-01	X-ray
4.06843e-02	3.239e-02	X-ray
4.07816e-02	6.271e-02	X-ray
4.17904e-02	1.346e-02	X-ray
5.73560e-02	1.173e-01	Gamma
2.31550e-01	2.054e-02	Gamma

2.93266e-01	4.280e-01	Gamma
3.50619e-01	3.231e-02	Gamma
4.90368e-01	2.161e-02	Gamma
6.64571e-01	5.692e-02	Gamma
7.21929e-01	5.393e-02	Gamma
8.80460e-01	1.031e-02	Gamma
1.60441e-01	1.371e-02	Beta
2.39785e-01	1.331e-01	Beta
3.87142e-01	4.871e-01	Beta
5.10165e-01	3.529e-01	Beta
1.29601e-05	1.051e+00	Auger electron
7.04257e-05	1.124e+00	Auger electron
8.72062e-05	3.158e+00	Auger electron
1.42971e-04	4.977e-01	Auger electron
4.13241e-04	1.034e-01	Auger electron
6.67515e-04	1.165e+00	Auger electron
8.25511e-04	8.240e-02	Auger electron
3.99585e-03	4.465e-01	Auger electron
4.89896e-03	1.487e-01	Auger electron
5.83520e-03	1.218e-02	Auger electron
1.53460e-02	6.610e-01	Conversion electron
2.93378e-02	3.688e-02	Auger electron
3.45832e-02	1.754e-02	Auger electron
5.05562e-02	8.391e-02	Conversion electron
5.61276e-02	1.985e-02	Conversion electron
2.51256e-01	2.251e-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