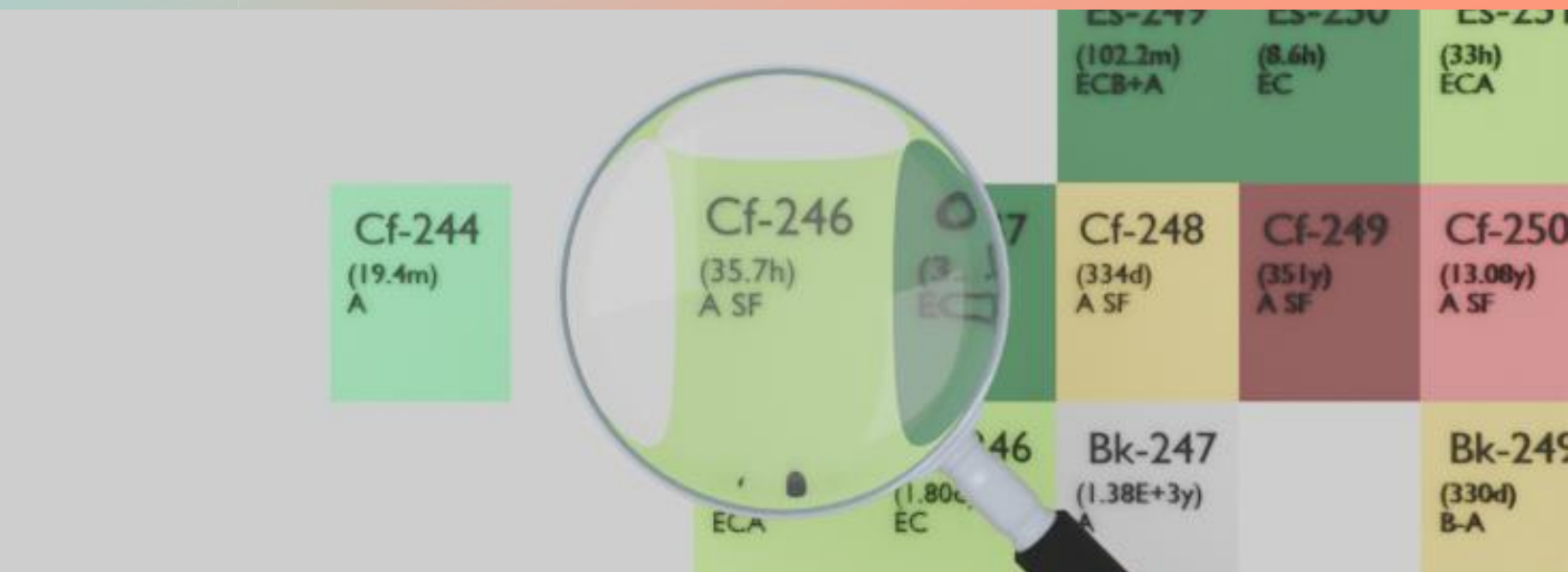




CALIFORNIUM-246

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cf-246
Atomic number (Z): 98
Mass number (A): 246
Neutron number (N): 148

RADIOACTIVE DECAY

Decay modes: α , Spontaneous fission
Half-life: 35.7 [h]
Decay constant: $5.3933\text{e-}06$ [1/s]
Daughters: Cm-242 (100.0%), SF (0.00025%)
Radioactive daughters: Cm-242

DOSIMETRIC CONSTANTS

Mean alpha energy: 6.8526 [MeV]
Mean electron energy: 0.00597 [MeV]
Mean photon energy: 0.00144 [MeV]
Air kerma rate constant, Γ_{10} : $1.314\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $1.318\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.099\text{e-}12$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $1.098\text{e-}12$ [Gy $\cdot$ kg/Bq $\cdot$ s]

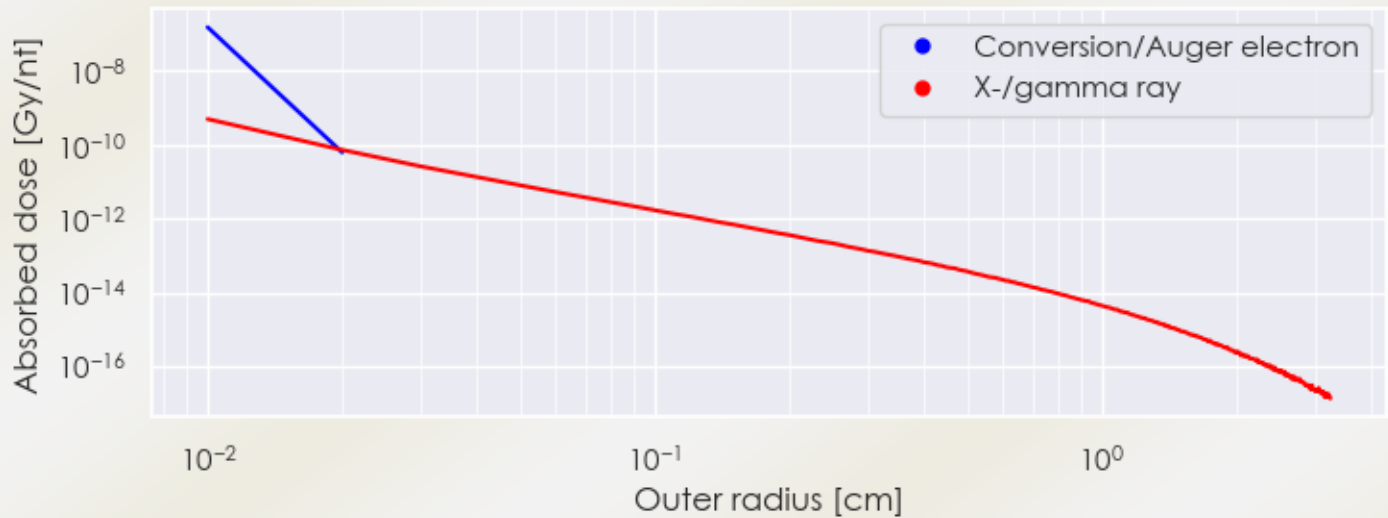
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 9.565×10^{-16} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.307×10^{-16} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

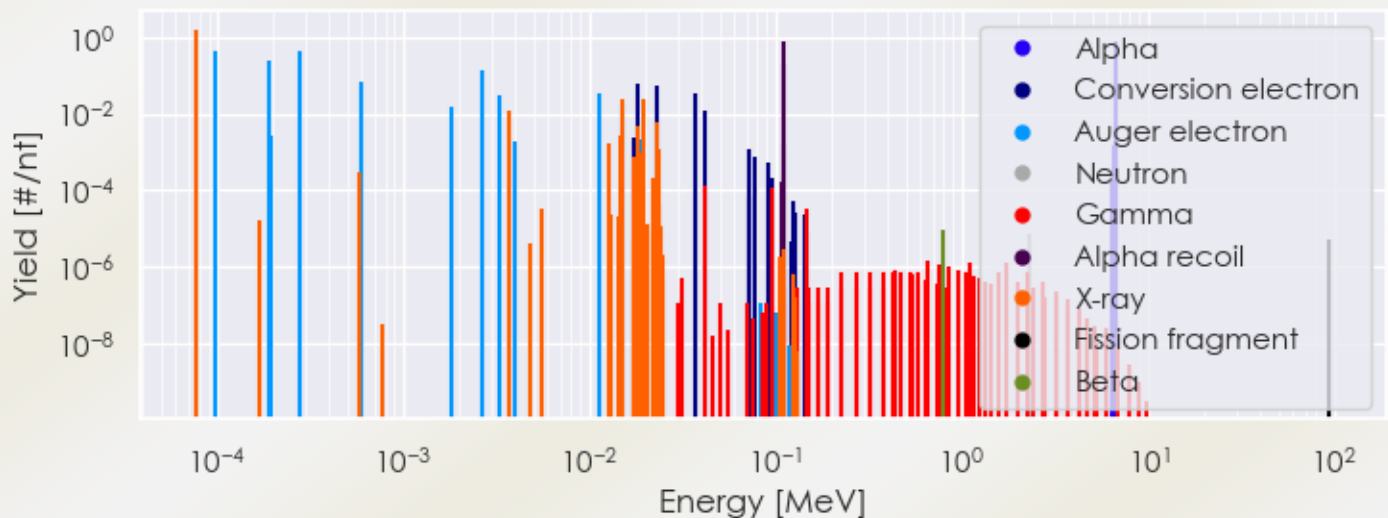
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cf-246 DPK.csv

SUMMARY SPECTRA (PLOT)

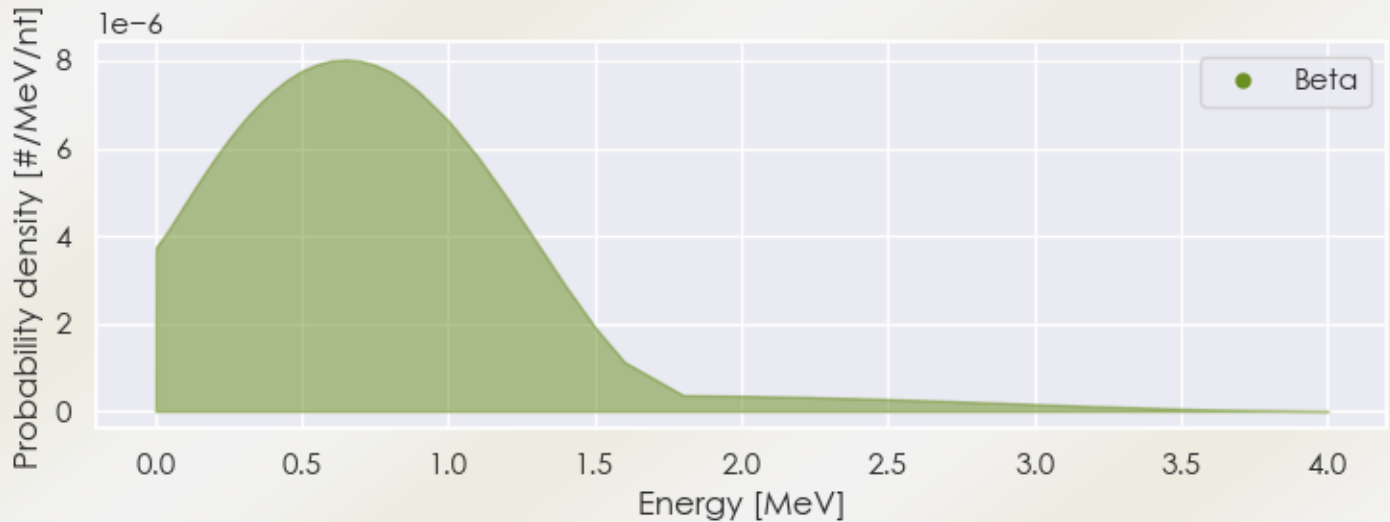
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cf-246 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/Cf-246 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/Cf-246 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.76496e-05	1.649e+00	X-ray
3.66063e-03	1.165e-02	X-ray
1.49784e-02	2.318e-02	X-ray
1.95388e-02	2.534e-02	X-ray
9.71087e-05	4.668e-01	Auger electron
1.90634e-04	2.498e-01	Auger electron
2.79630e-04	4.329e-01	Auger electron
6.00679e-04	7.160e-02	Auger electron
1.79618e-03	1.486e-02	Auger electron
2.67788e-03	1.400e-01	Auger electron

3.27229e-03	3.101e-02	Auger electron
1.12753e-02	3.415e-02	Auger electron
1.50478e-02	1.807e-02	Auger electron
1.82240e-02	6.373e-02	Conversion electron
2.30060e-02	5.515e-02	Conversion electron
3.71710e-02	3.397e-02	Conversion electron
4.20000e-02	1.266e-02	Conversion electron
6.70851e+00	2.059e-01	Alpha
6.74996e+00	7.925e-01	Alpha
1.10957e-01	2.059e-01	Alpha recoil
1.11642e-01	7.925e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6