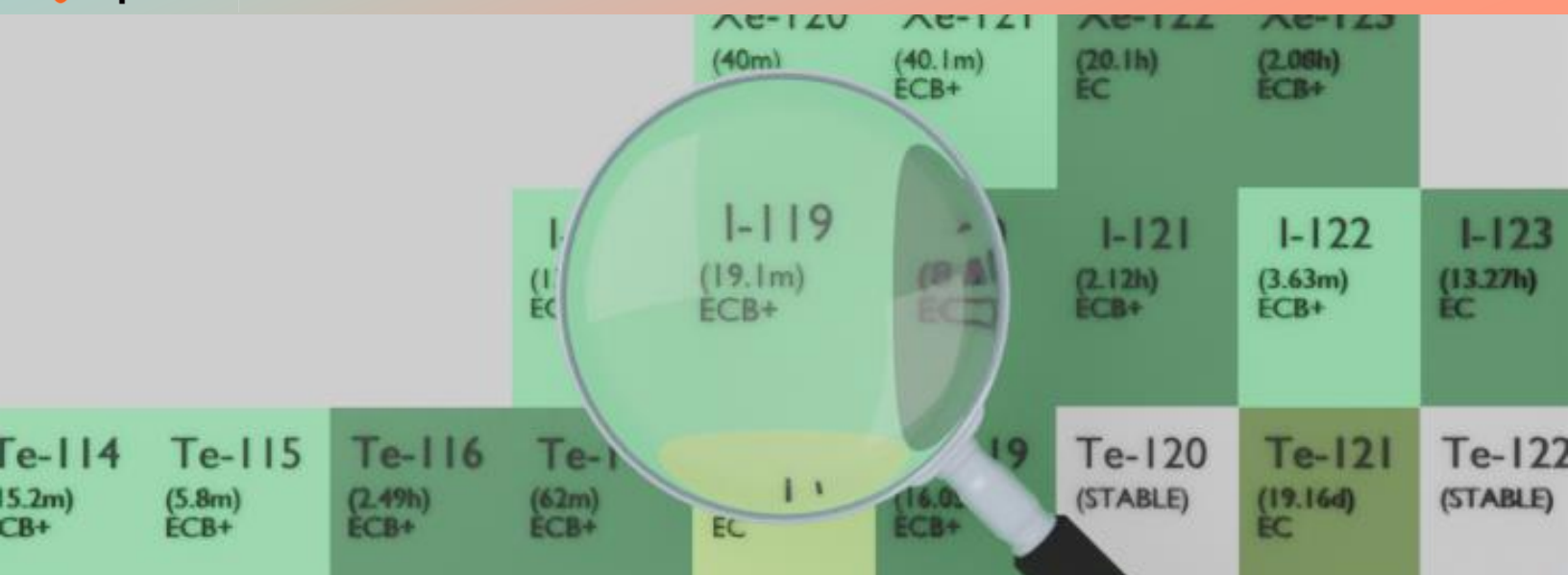




IODINE-119

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: I-119
Atomic number (Z): 53
Mass number (A): 119
Neutron number (N): 66

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 19.1 [m]
Decay constant: $6.0484\text{e-}04$ [1/s]
Daughters: Te-119 (99.0%), Te-119m (0.954%)
Radioactive daughters: Te-119, Te-119m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.51163 [MeV]
Mean photon energy: 0.91102 [MeV]
Air kerma rate constant, Γ_{10} : $1.585\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $3.624\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $8.197\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

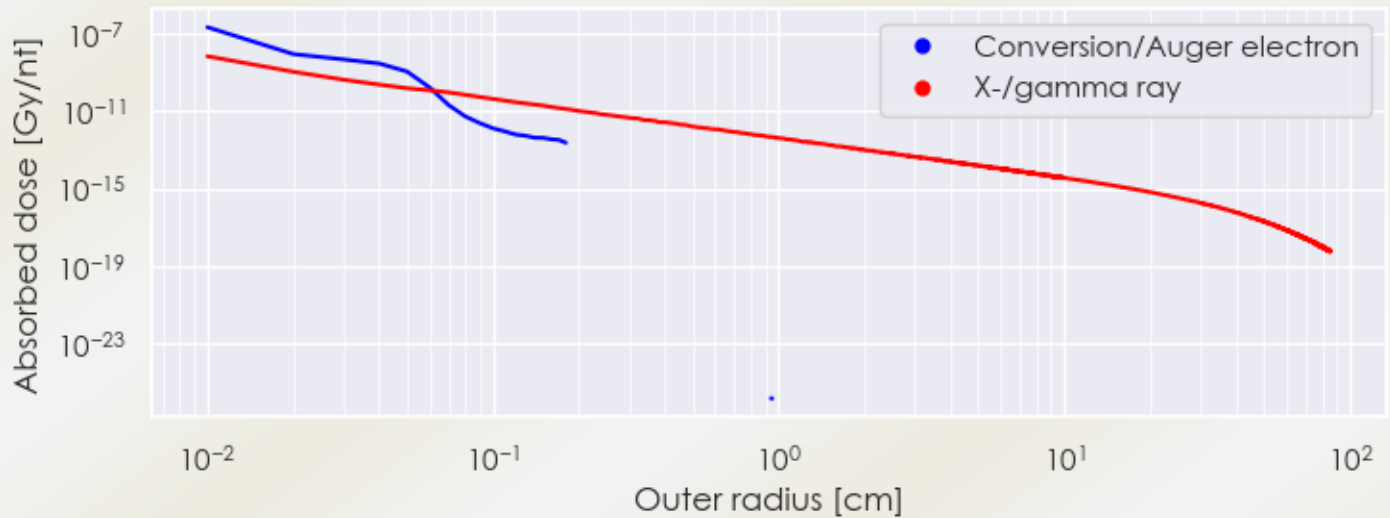
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 8.197×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.460×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

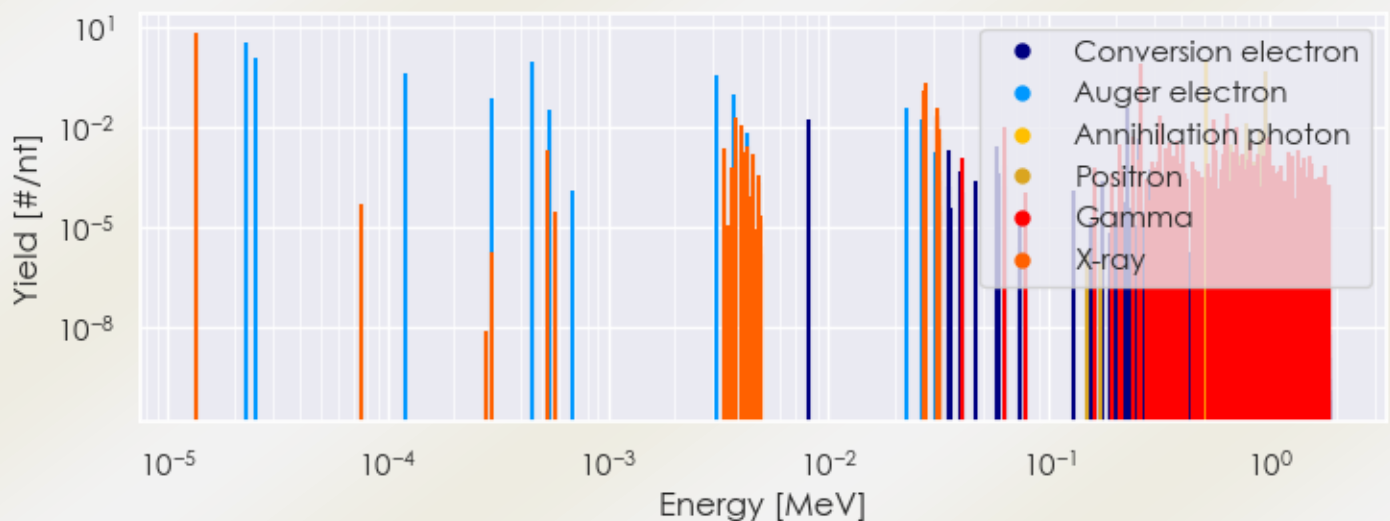
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/I-119 DPK.csv

SUMMARY SPECTRA (PLOT)

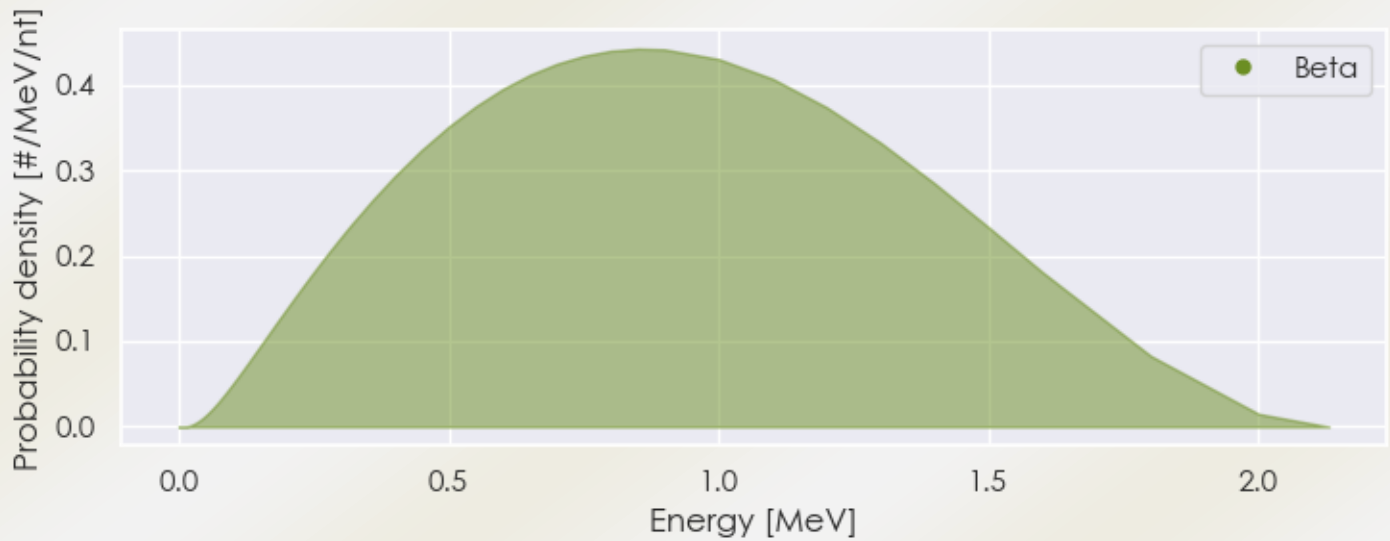
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/I-119 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/I-119 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/I-119 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36107e-05	7.321e+00	X-ray
3.75695e-03	1.937e-02	X-ray
4.02446e-03	1.114e-02	X-ray
2.71868e-02	1.234e-01	X-ray
2.74652e-02	2.298e-01	X-ray
3.09378e-02	2.116e-02	X-ray
3.09901e-02	4.104e-02	X-ray
6.30900e-02	1.066e-02	Gamma
2.57520e-01	8.670e-01	Gamma
3.20530e-01	2.167e-02	Gamma

5.11000e-01	1.054e+00	Annihilation photon
5.57240e-01	1.769e-02	Gamma
6.35860e-01	2.688e-02	Gamma
7.84919e-01	1.264e-02	Positron
9.57009e-01	4.786e-01	Positron
2.29232e-05	3.578e+00	Auger electron
2.49274e-05	1.194e+00	Auger electron
1.21053e-04	4.113e-01	Auger electron
2.94855e-04	7.575e-02	Auger electron
4.49456e-04	9.213e-01	Auger electron
5.41075e-04	3.550e-02	Auger electron
3.08416e-03	3.619e-01	Auger electron
3.67818e-03	1.025e-01	Auger electron
8.14500e-03	1.746e-02	Conversion electron
2.26653e-02	3.990e-02	Auger electron
2.65056e-02	1.757e-02	Auger electron
3.12850e-02	2.429e-02	Conversion electron
2.25715e-01	3.903e-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