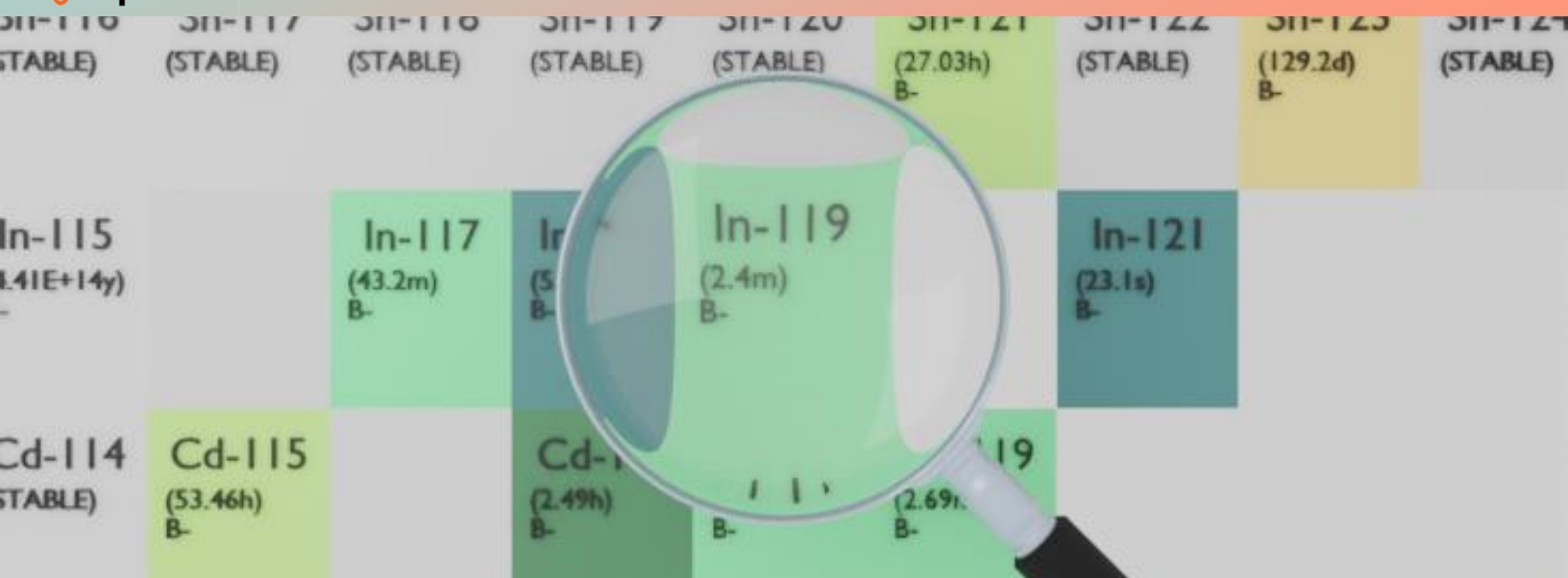




INDIUM-119

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: In-119
Atomic number (Z): 49
Mass number (A): 119
Neutron number (N): 70

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 2.4 [m]
Decay constant: $4.8135\text{e-}03$ [1/s]
Daughters: Sn-119m (0.948%), Sn-119 (99.1%)
Radioactive daughters: Sn-119m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.61478 [MeV]
Mean photon energy: 0.77014 [MeV]
Air kerma rate constant, Γ_{10} : $2.987\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $2.987\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $9.850\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

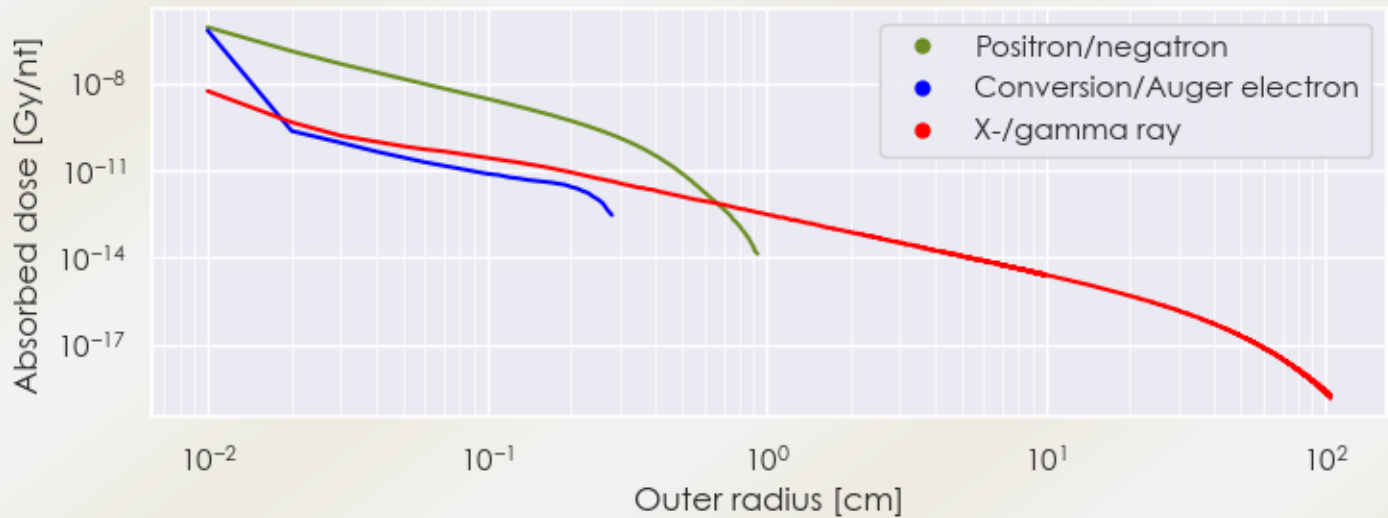
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 9.850×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.234×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

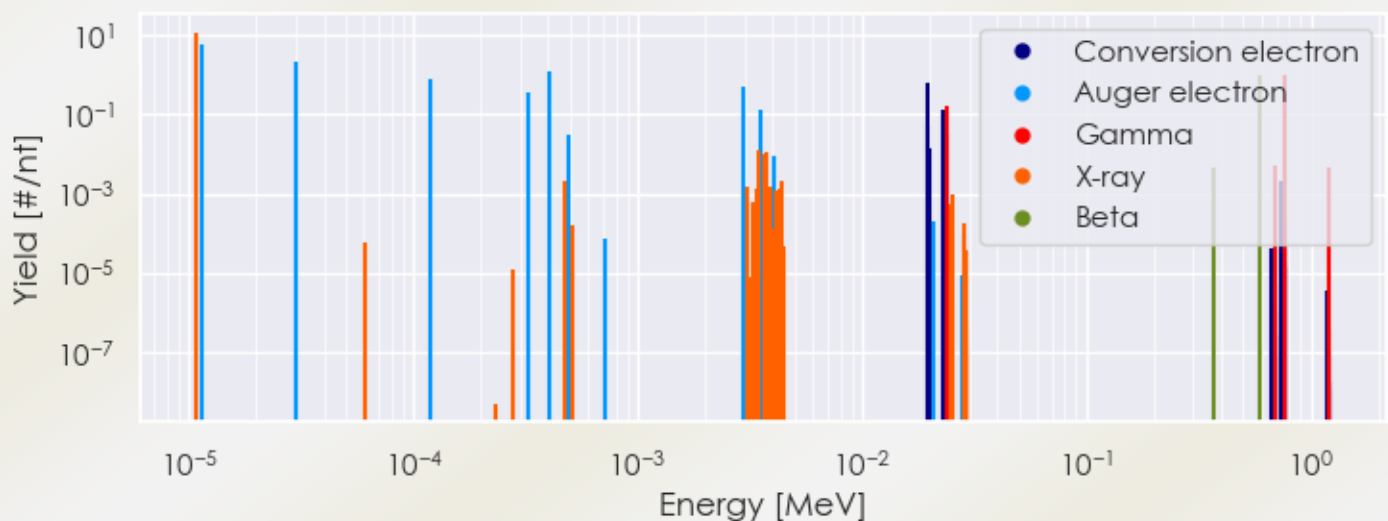
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

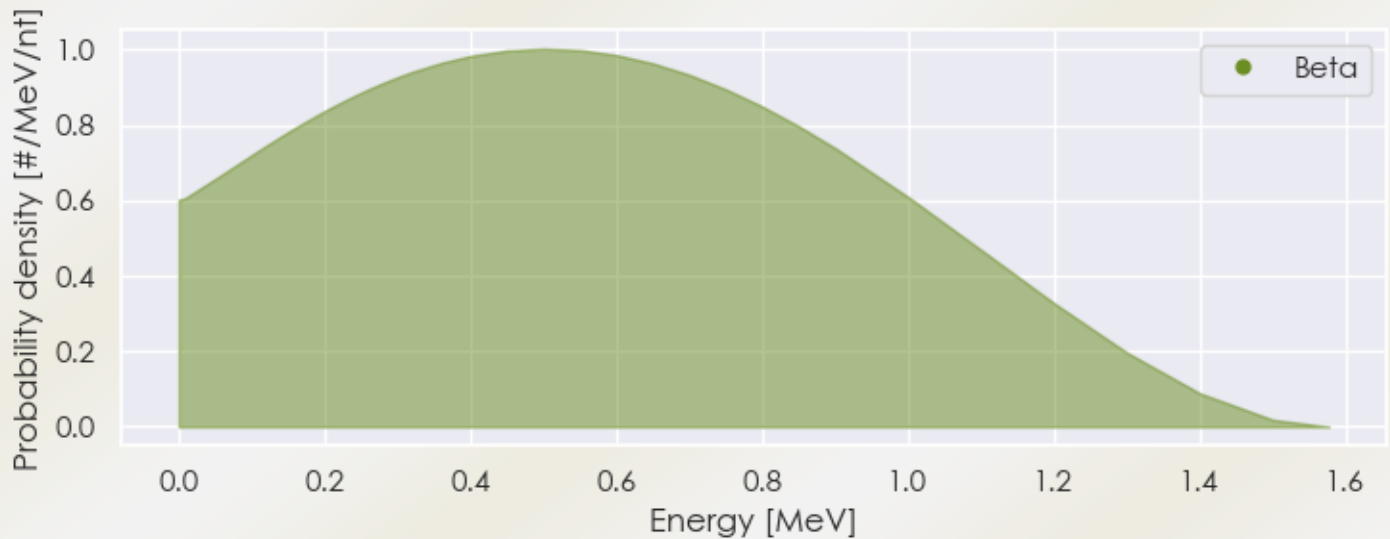
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.08560e-05	1.183e+01	X-ray
3.43219e-03	1.225e-02	X-ray
3.72998e-03	1.088e-02	X-ray
2.38710e-02	1.597e-01	Gamma
7.63140e-01	9.920e-01	Gamma
5.94312e-01	9.953e-01	Beta
1.13831e-05	5.842e+00	Auger electron
2.99912e-05	2.166e+00	Auger electron
1.18565e-04	7.398e-01	Auger electron
3.23448e-04	3.429e-01	Auger electron

4.02636e-04	1.250e+00	Auger electron
4.92910e-04	3.008e-02	Auger electron
2.96810e-03	4.886e-01	Auger electron
3.50113e-03	1.288e-01	Auger electron
1.94307e-02	6.092e-01	Conversion electron
1.97102e-02	5.054e-02	Conversion electron
1.99442e-02	1.412e-02	Conversion electron
2.31607e-02	1.328e-01	Conversion electron
2.38710e-02	2.986e-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