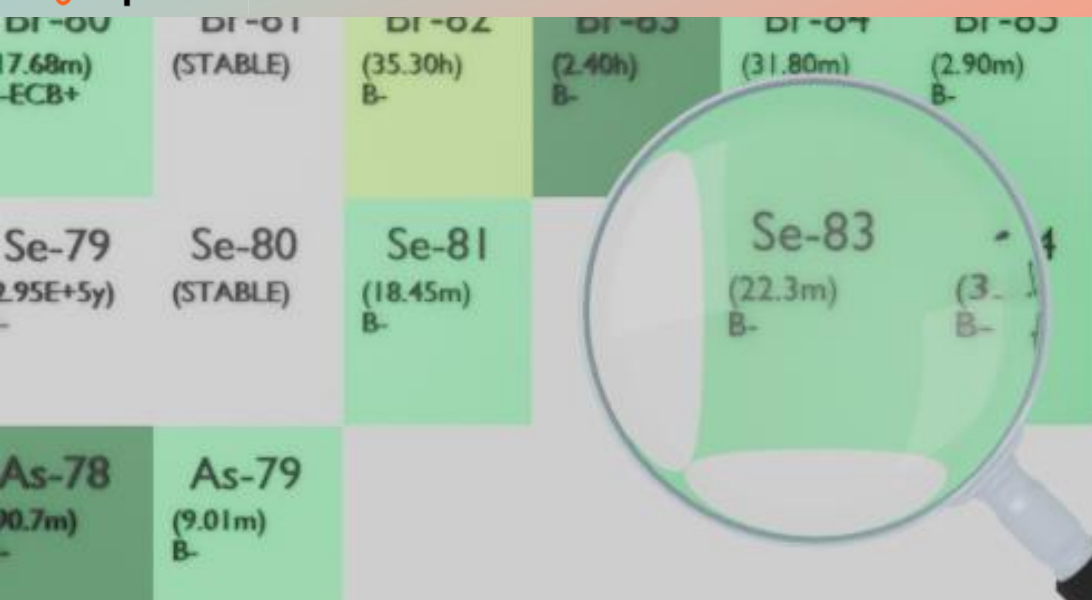




SELENIUM-83

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Se-83
Atomic number (Z): 34
Mass number (A): 83
Neutron number (N): 49

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 22.3 [m]
Decay constant: 5.1805e-04 [1/s]
Daughters: Br-83 (100.0%)
Radioactive daughters: Br-83

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.45282 [MeV]
Mean photon energy: 2.62541 [MeV]
Air kerma rate constant, Γ_{10} : 9.048e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 9.048e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 7.255e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

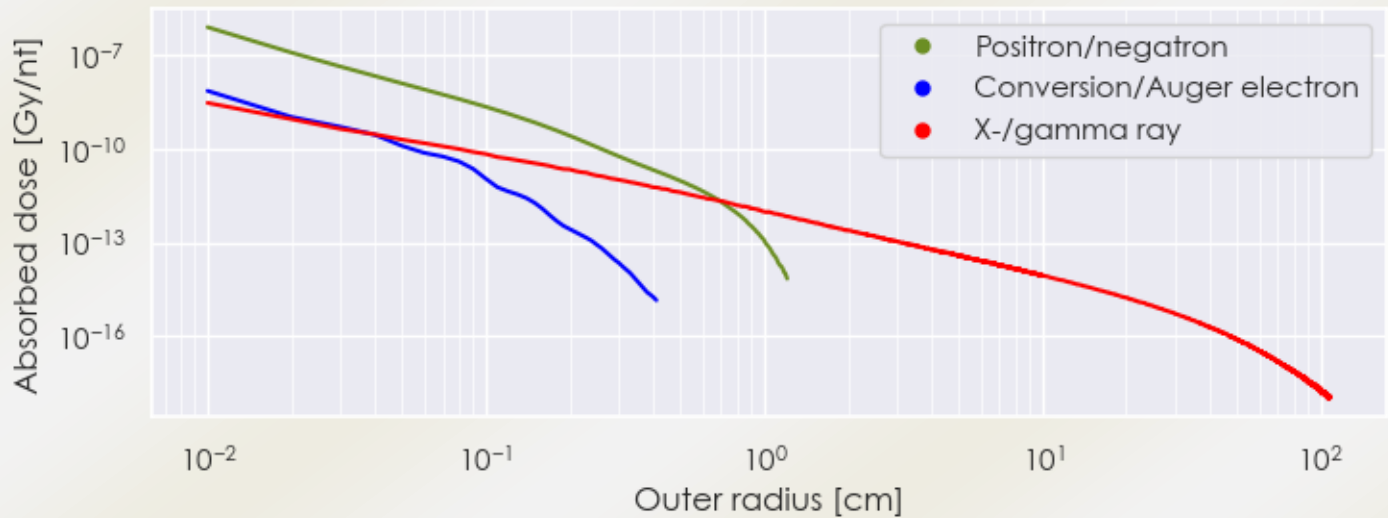
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 7.255×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.206×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

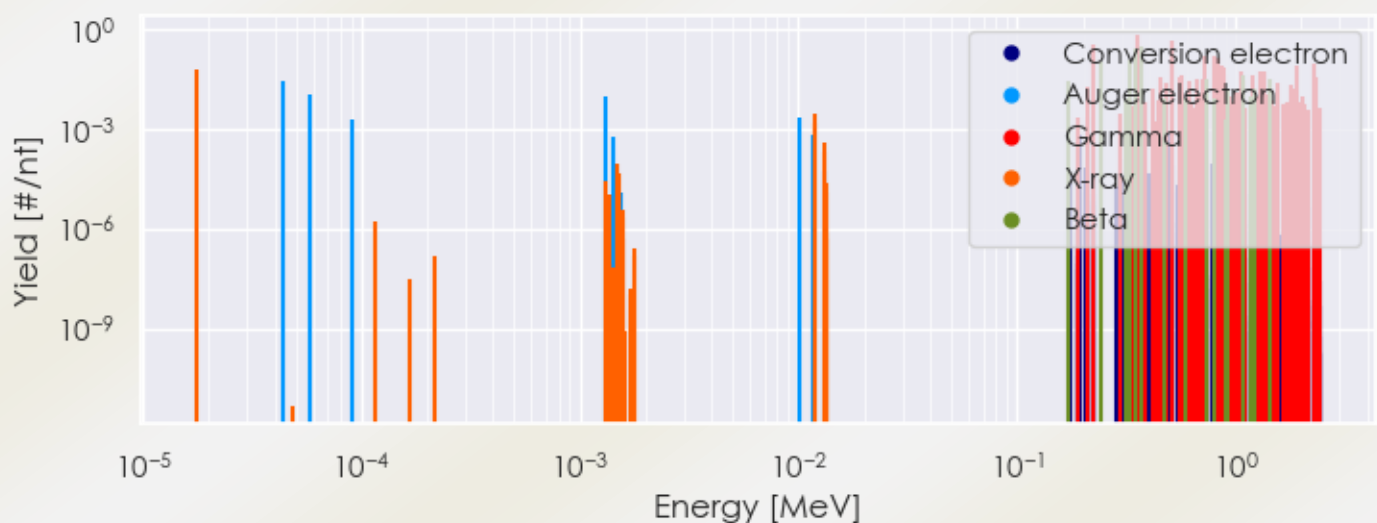
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Se-83 DPK.csv

SUMMARY SPECTRA (PLOT)

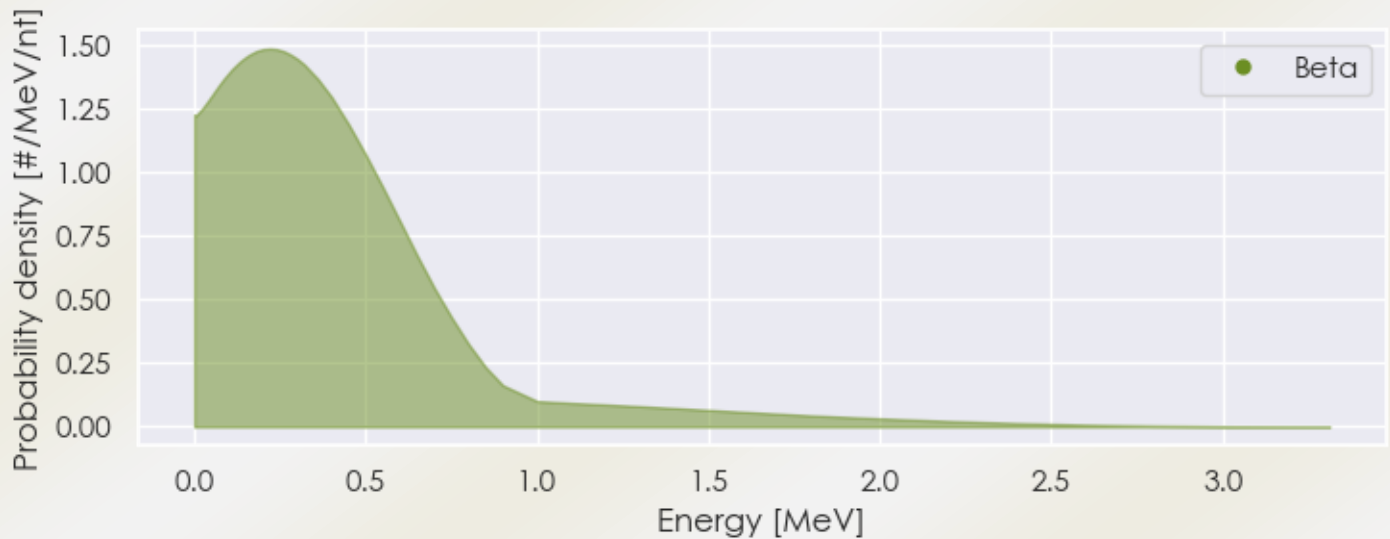
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Se-83 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/Se-83 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/Se-83 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.75888e-05	6.157e-02	X-ray
2.08300e-01	1.939e-02	Gamma
2.25180e-01	3.269e-01	Gamma
3.56700e-01	7.000e-01	Gamma
4.15200e-01	1.624e-02	Gamma
4.57410e-01	3.465e-02	Gamma
4.85700e-01	2.310e-02	Gamma
4.85720e-01	2.359e-02	Gamma
5.10060e-01	4.270e-01	Gamma
5.53200e-01	3.360e-02	Gamma

5.71910e-01	4.270e-02	Gamma
6.09220e-01	2.877e-02	Gamma
6.64800e-01	3.290e-02	Gamma
6.79400e-01	1.029e-02	Gamma
7.12110e-01	3.080e-02	Gamma
7.18030e-01	1.498e-01	Gamma
7.99040e-01	1.484e-01	Gamma
8.36520e-01	1.330e-01	Gamma
8.66640e-01	8.190e-02	Gamma
8.83610e-01	7.210e-02	Gamma
8.87810e-01	4.270e-02	Gamma
9.95930e-01	1.309e-02	Gamma
1.04213e+00	1.190e-02	Gamma
1.06411e+00	5.460e-02	Gamma
1.08206e+00	2.653e-02	Gamma
1.19175e+00	4.137e-02	Gamma
1.22595e+00	1.302e-02	Gamma
1.29380e+00	1.680e-02	Gamma
1.29915e+00	5.250e-02	Gamma
1.31705e+00	3.990e-02	Gamma
1.34129e+00	5.390e-02	Gamma
1.35259e+00	4.620e-02	Gamma
1.42060e+00	1.134e-02	Gamma
1.55481e+00	2.527e-02	Gamma
1.77996e+00	2.086e-02	Gamma
1.82712e+00	1.330e-02	Gamma
1.85450e+00	1.680e-02	Gamma
1.87130e+00	1.568e-02	Gamma
1.89488e+00	7.770e-02	Gamma
2.29030e+00	9.310e-02	Gamma
2.33750e+00	3.430e-02	Gamma
1.70421e-01	2.803e-02	Beta
2.44014e-01	1.068e-01	Beta
3.29002e-01	1.215e-01	Beta
3.47440e-01	2.519e-01	Beta
3.67325e-01	3.136e-01	Beta
7.41482e-01	2.940e-02	Beta
9.29770e-01	1.372e-02	Beta

1.07327e+00	3.920e-02	Beta
1.21803e+00	1.568e-02	Beta
1.42610e+00	2.940e-02	Beta
4.38522e-05	2.773e-02	Auger electron
5.76879e-05	1.069e-02	Auger 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