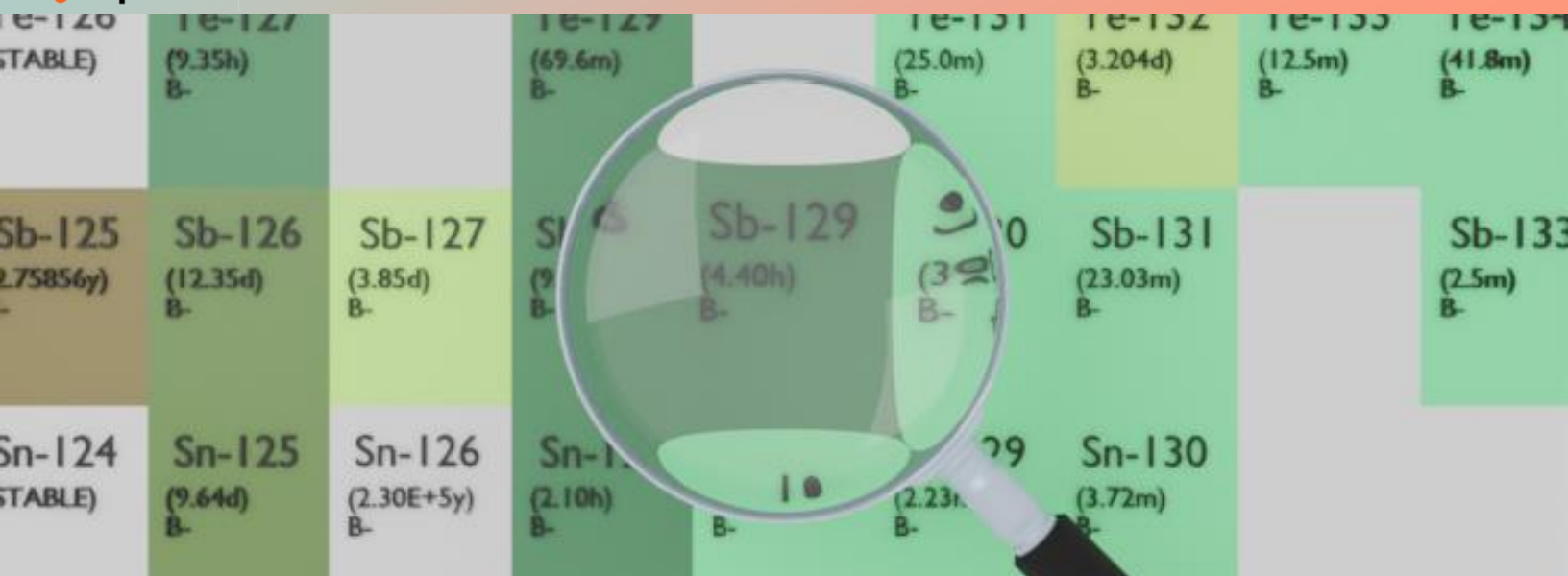




ANTIMONY-129

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sb-129
Atomic number (Z): 51
Mass number (A): 129
Neutron number (N): 78

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 4.4 [h]
Decay constant: 4.3759×10^{-5} [1/s]
Daughters: Te-129 (77.4%), Te-129m (22.6%)
Radioactive daughters: Te-129, Te-129m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.39525 [MeV]
Mean photon energy: 1.46008 [MeV]
Air kerma rate constant, Γ_{10} : 5.159×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 5.159×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.333×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

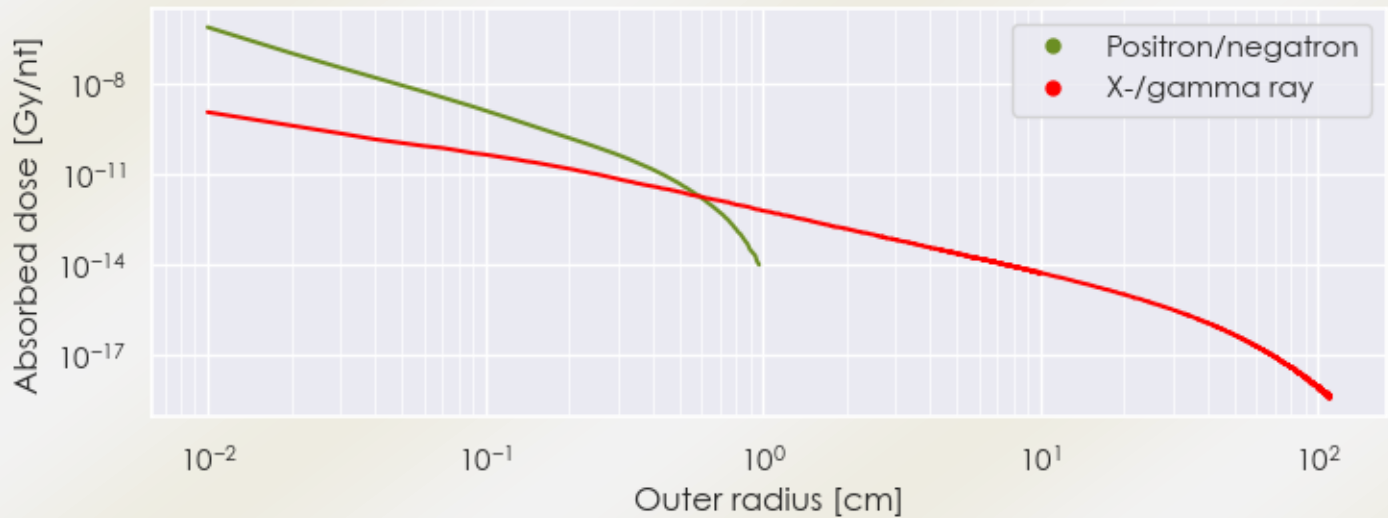
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 6.333×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.339×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

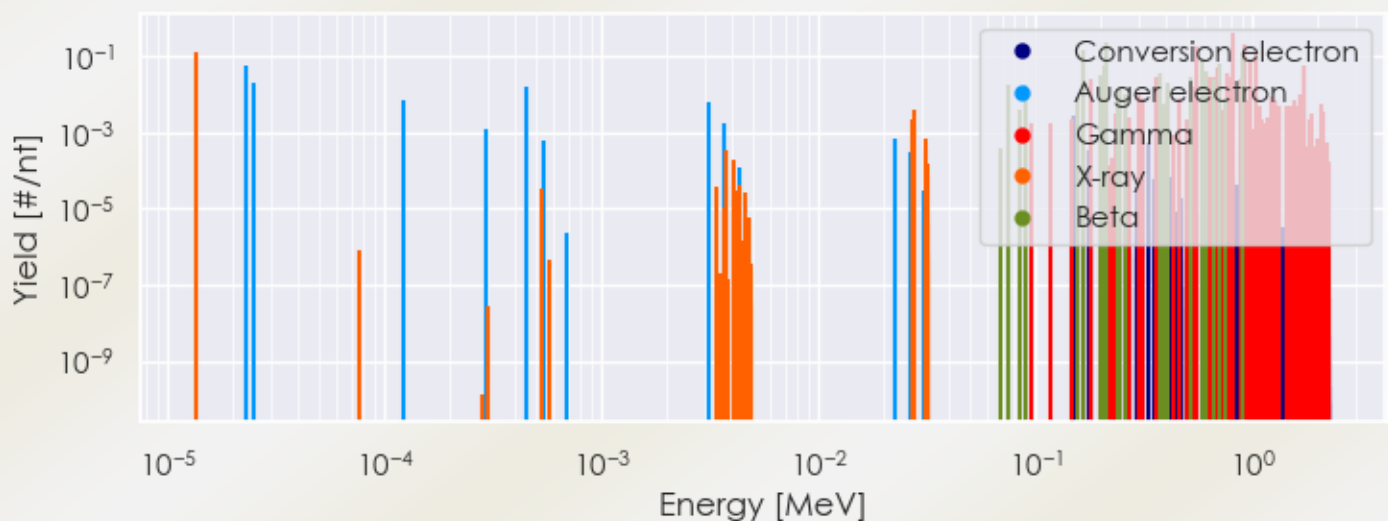
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sb-129 DPK.csv

SUMMARY SPECTRA (PLOT)

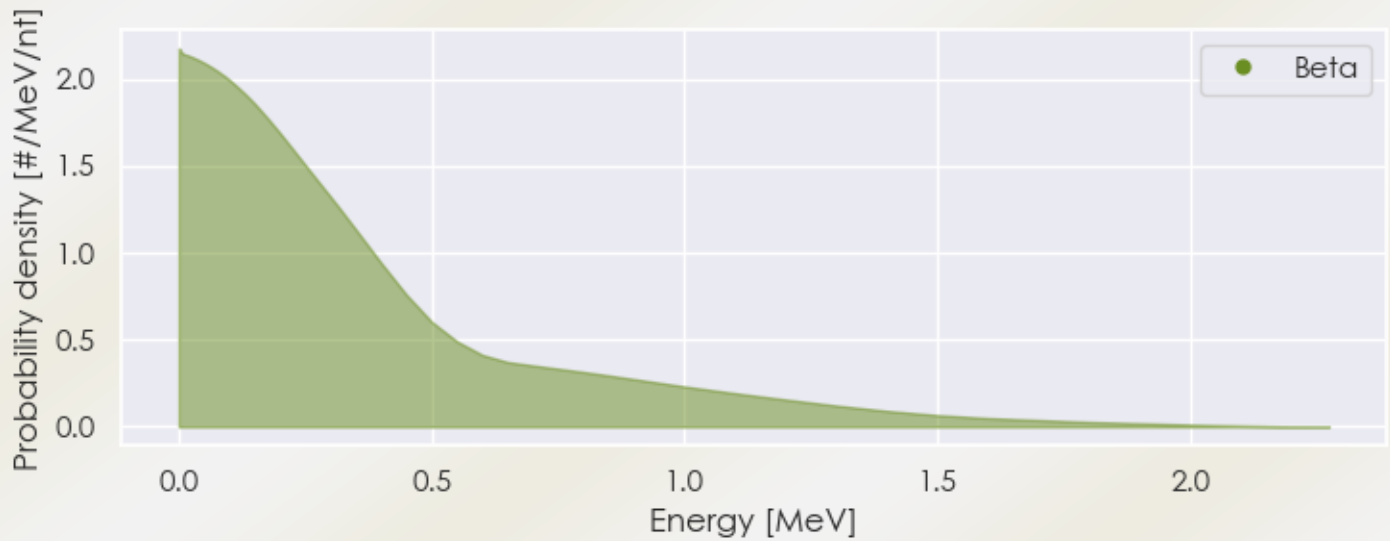
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sb-129 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/Sb-129 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/Sb-129 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36107e-05	1.234e-01	X-ray
1.80800e-01	2.537e-02	Gamma
2.95500e-01	1.032e-02	Gamma
3.59400e-01	2.838e-02	Gamma
4.05000e-01	1.376e-02	Gamma
5.23800e-01	1.591e-02	Gamma
5.44700e-01	1.793e-01	Gamma
6.33700e-01	2.752e-02	Gamma
6.54300e-01	3.010e-02	Gamma
6.83600e-01	5.117e-02	Gamma

7.61000e-01	3.784e-02	Gamma
7.73400e-01	2.752e-02	Gamma
7.86600e-01	1.892e-02	Gamma
8.12800e-01	4.300e-01	Gamma
8.76200e-01	2.580e-02	Gamma
9.14600e-01	2.004e-01	Gamma
9.66400e-01	7.697e-02	Gamma
1.03010e+00	1.260e-01	Gamma
1.73650e+00	5.977e-02	Gamma
1.73650e+00	5.977e-02	Gamma
7.53409e-02	1.776e-02	Beta
8.89695e-02	1.875e-02	Beta
1.66857e-01	1.480e-01	Beta
2.00017e-01	3.256e-02	Beta
2.05959e-01	5.921e-02	Beta
2.09412e-01	2.447e-01	Beta
2.45370e-01	1.678e-02	Beta
3.71913e-01	3.750e-02	Beta
4.09162e-01	1.974e-02	Beta
5.20786e-01	2.960e-02	Beta
5.87851e-01	9.078e-02	Beta
6.11098e-01	4.046e-02	Beta
6.66997e-01	2.566e-02	Beta
7.06919e-01	6.710e-02	Beta
9.02004e-01	1.046e-01	Beta
2.29213e-05	6.030e-02	Auger electron
2.49321e-05	2.009e-02	Auger electron
4.49344e-04	1.557e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6