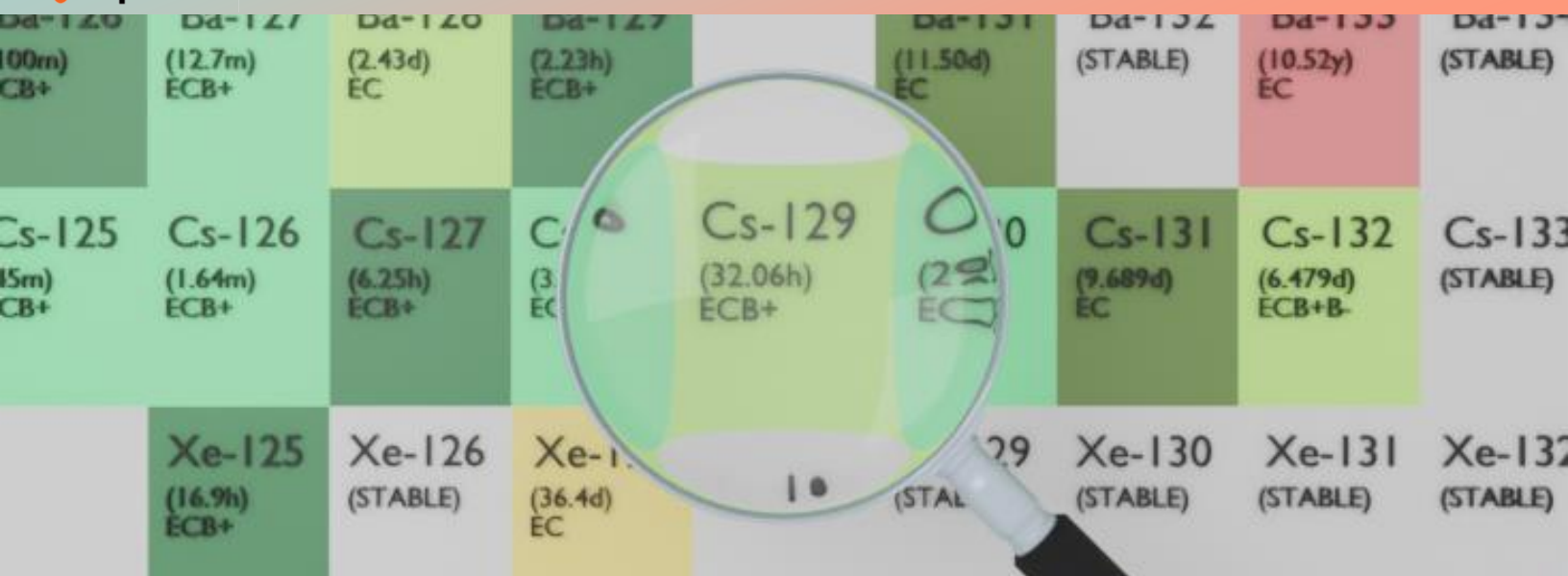




The image shows a portion of a periodic table of radionuclides. A magnifying glass is focused on the entry for Cesium-129 (Cs-129). The table includes isotopes of Barium (Ba), Cesium (Cs), and Xenon (Xe) with their half-lives and decay modes. The highlighted entry for Cs-129 shows a half-life of 32.06 hours and a decay mode of Electron Capture (ECB+).

Isotope	Half-life	Decay Mode
Ba-126	(100m)	CB+
Ba-127	(12.7m)	ECB+
Ba-128	(2.43d)	EC
Ba-129	(2.23h)	ECB+
Ba-131	(11.50d)	EC
Ba-132	(STABLE)	
Ba-133	(10.52y)	EC
Ba-135	(STABLE)	
Cs-125	(15m)	CB+
Cs-126	(1.64m)	ECB+
Cs-127	(6.25h)	ECB+
Cs-129	(32.06h)	ECB+
Cs-130	(2.9m)	EC
Cs-131	(9.689d)	EC
Cs-132	(6.479d)	ECB+B-
Cs-133	(STABLE)	
Xe-125	(16.9h)	ECB+
Xe-126	(STABLE)	
Xe-129	(36.4d)	EC
Xe-130	(STABLE)	
Xe-131	(STABLE)	
Xe-132	(STABLE)	

CESIUM-129

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-129
Atomic number (Z): 55
Mass number (A): 129
Neutron number (N): 74

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 32.06 [h]
Decay constant: 6.0056×10^{-6} [1/s]
Daughters: Xe-129 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.01753 [MeV]
Mean photon energy: 0.2802 [MeV]
Air kerma rate constant, Γ_{10} : 1.542×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.542×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.809×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

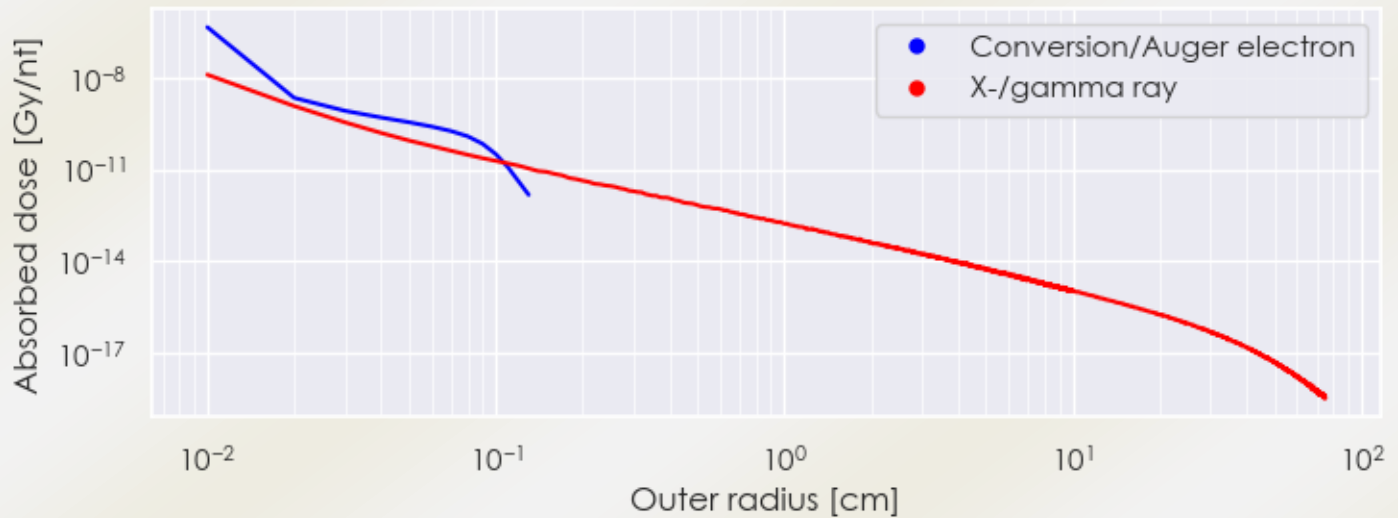
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.809×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.489×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

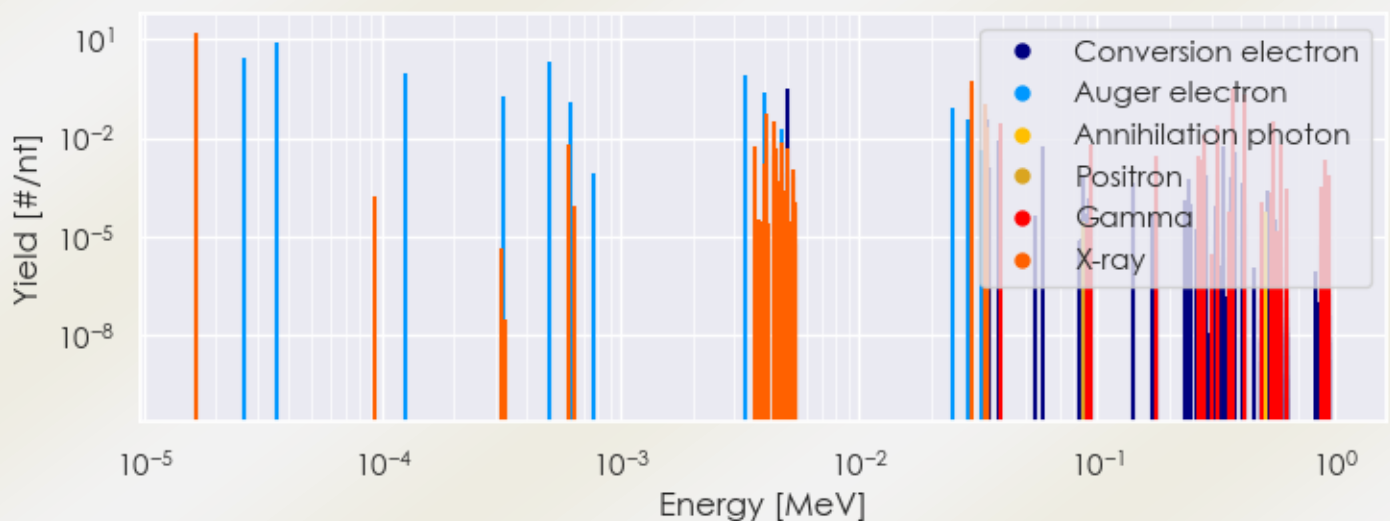
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

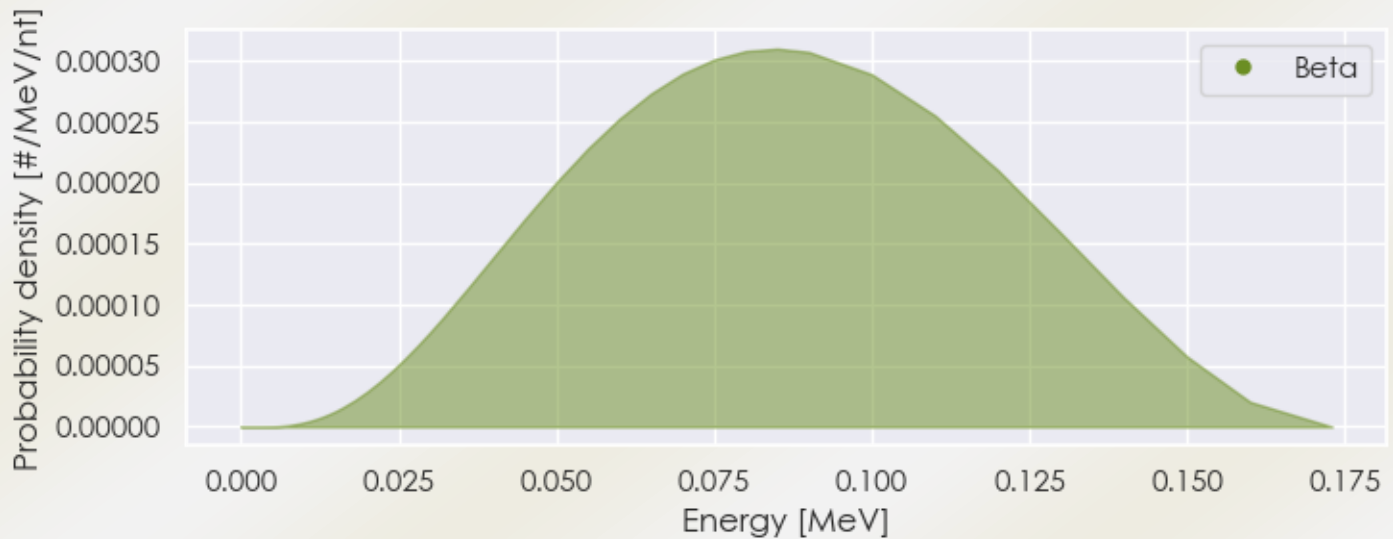
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.66176e-05	1.647e+01	X-ray
4.09719e-03	5.258e-02	X-ray
4.41300e-03	3.061e-02	X-ray
2.94521e-02	3.023e-01	X-ray
2.97812e-02	5.599e-01	X-ray
3.35665e-02	5.256e-02	X-ray
3.36295e-02	1.019e-01	X-ray
3.43952e-02	1.102e-02	X-ray
3.44080e-02	2.149e-02	X-ray
3.95780e-02	2.968e-02	Gamma

2.78614e-01	1.322e-02	Gamma
3.18180e-01	2.448e-02	Gamma
3.71918e-01	3.060e-01	Gamma
4.11490e-01	2.231e-01	Gamma
5.48945e-01	3.397e-02	Gamma
2.61919e-05	2.569e+00	Auger electron
3.62443e-05	7.832e+00	Auger electron
1.23754e-04	9.666e-01	Auger electron
3.22299e-04	1.867e-01	Auger electron
5.05189e-04	2.145e+00	Auger electron
6.17496e-04	1.228e-01	Auger electron
3.32597e-03	8.452e-01	Auger electron
4.00334e-03	2.508e-01	Auger electron
4.70776e-03	1.905e-02	Auger electron
5.02200e-03	3.156e-01	Conversion electron
2.44715e-02	8.500e-02	Auger electron
2.86854e-02	3.803e-02	Auger electron
3.41611e-02	3.832e-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