



The image shows a periodic table of radionuclides. A magnifying glass is positioned over the Cesium-131 (Cs-131) entry, which is highlighted in green. The table includes various isotopes of Barium (Ba), Cesium (Cs), and Xenon (Xe) with their half-lives and decay modes.

Isotope	Half-life	Decay Mode
Ba-120	2.43d	EC
Ba-127	(2.23h)	ECB+
Ba-131	(11.50d)	EC
Ba-132	(STABLE)	
Ba-133	(10.52y)	EC
Ba-134	(STABLE)	
Ba-135	(STABLE)	
Ba-136	(STABLE)	
Cs-127	(3.25h)	CB+
Cs-128	(3.640m)	ECB+
Cs-129	(32.06h)	ECB+
Cs-130	(2.6m)	EC
Cs-131	(9.689d)	EC
Cs-132	(6.48d)	EC
Cs-133	(STABLE)	
Cs-134	(2.0648y)	B-EC
Cs-135	(2.3E+6y)	B-
Xe-126	(STABLE)	
Xe-127	(36.4d)	EC
Xe-128	(STABLE)	
Xe-129	(STABLE)	
Xe-130	(STABLE)	
Xe-131	(STABLE)	
Xe-132	(STABLE)	
Xe-133	(5.243d)	B-
Xe-134	(STABLE)	

CESIUM-131

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-131
Atomic number (Z): 55
Mass number (A): 131
Neutron number (N): 76

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 9.689 [d]
Decay constant: 8.2800×10^{-7} [1/s]
Daughters: Xe-131 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.00635 [MeV]
Mean photon energy: 0.02315 [MeV]
Air kerma rate constant, Γ_{10} : 4.286×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 4.286×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.017×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

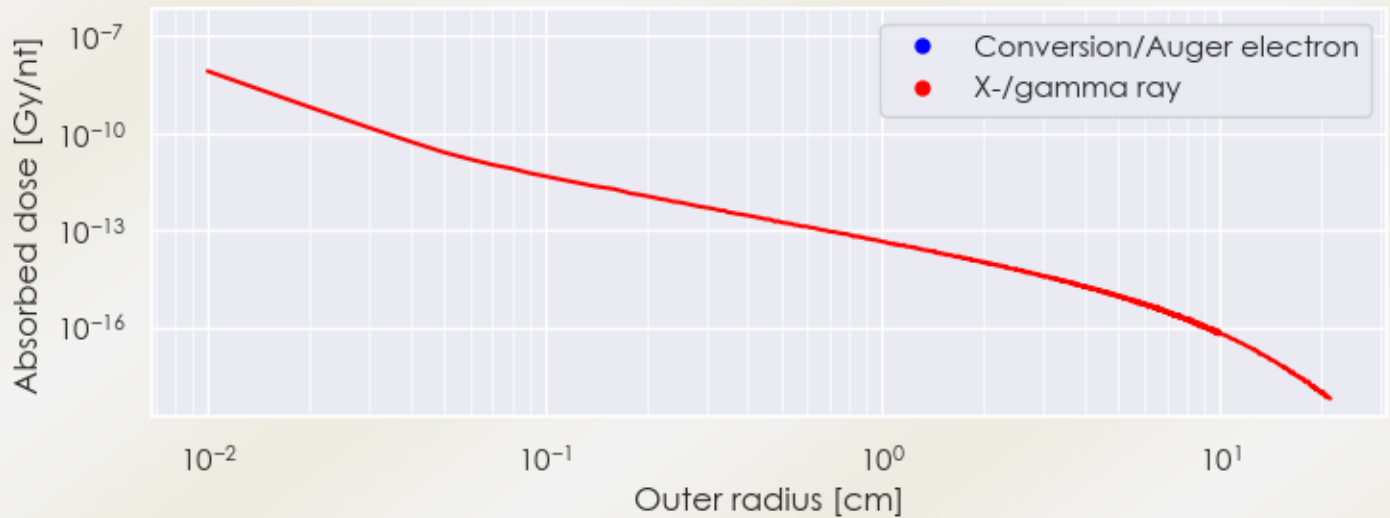
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e^-}$: 1.017e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.709e-15 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

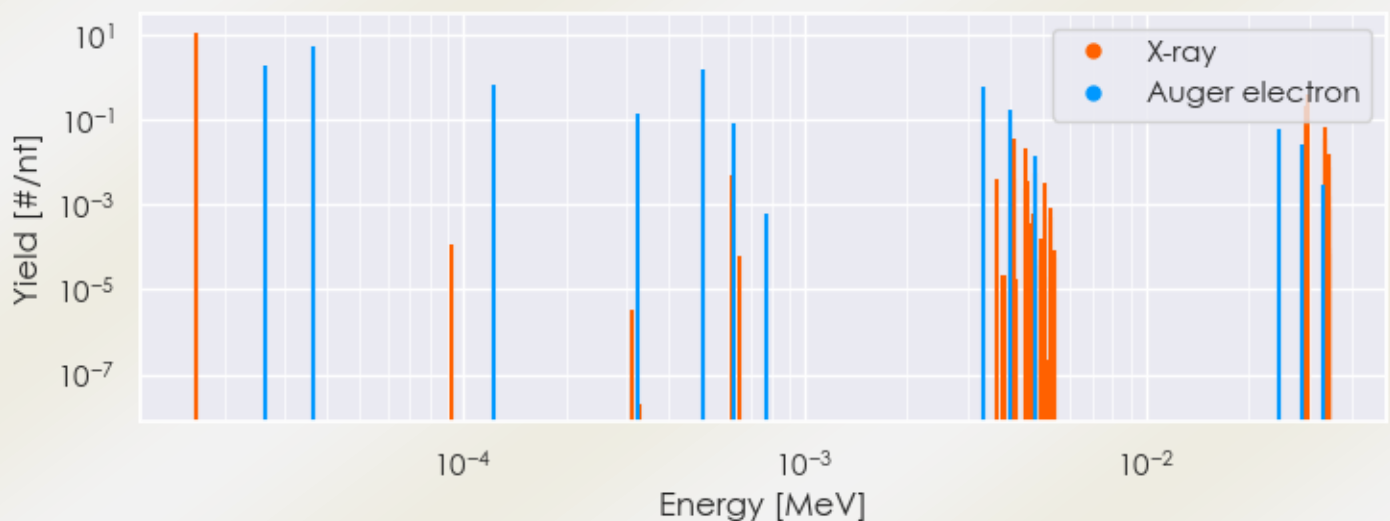
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cs-131 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-131 Summary 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-131 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Cs-131%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#]/nt] if > 0.01	Radiation type
1.66176e-05	1.186e+01	X-ray
4.09719e-03	3.740e-02	X-ray
4.41300e-03	2.174e-02	X-ray
2.94521e-02	2.131e-01	X-ray
2.97812e-02	3.946e-01	X-ray
3.35665e-02	3.704e-02	X-ray
3.36295e-02	7.181e-02	X-ray
3.44080e-02	1.515e-02	X-ray
2.62367e-05	1.855e+00	Auger electron
3.62530e-05	5.640e+00	Auger electron
1.23767e-04	7.000e-01	Auger electron
3.26299e-04	1.411e-01	Auger electron
5.05373e-04	1.539e+00	Auger electron
6.17976e-04	8.817e-02	Auger electron
3.32891e-03	6.060e-01	Auger electron
4.00671e-03	1.798e-01	Auger electron
4.71182e-03	1.367e-02	Auger electron
2.44715e-02	5.991e-02	Auger electron
2.86854e-02	2.680e-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