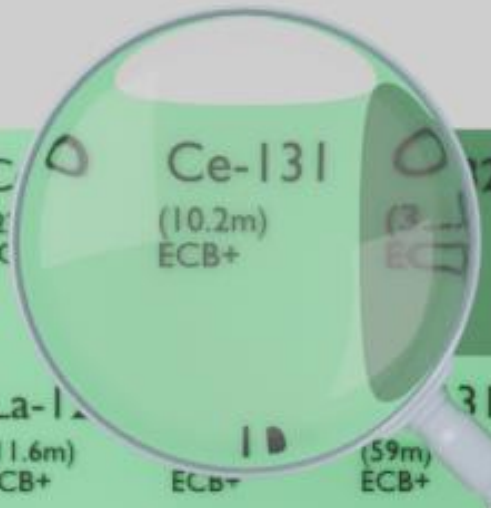




Pr-134 (11m) ECB+	Pr-135 (24m) ECB+	Pr-136 (13.1m) ECB+
Ce-130 (2.2m) ECB+	Ce-131 (10.2m) ECB+	Ce-132 (97m) ECB+
Ce-133 (3.16d) EC	Ce-134 (17.7h) ECB+	Ce-135 (3.16d) EC
La-128 (5.18m) ECB+	La-129 (11.6m) ECB+	La-130 (59m) ECB+
La-131 (4.8h) ECB+	La-132 (3.912h) ECB+	La-133 (6.45m) ECB+

CERIUM-131

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ce-131
Atomic number (Z): 58
Mass number (A): 131
Neutron number (N): 73

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 10.2 [m]
Decay constant: 1.1326×10^{-3} [1/s]
Daughters: La-131 (100.0%)
Radioactive daughters: La-131

DOSIMETRIC CONSTANTS

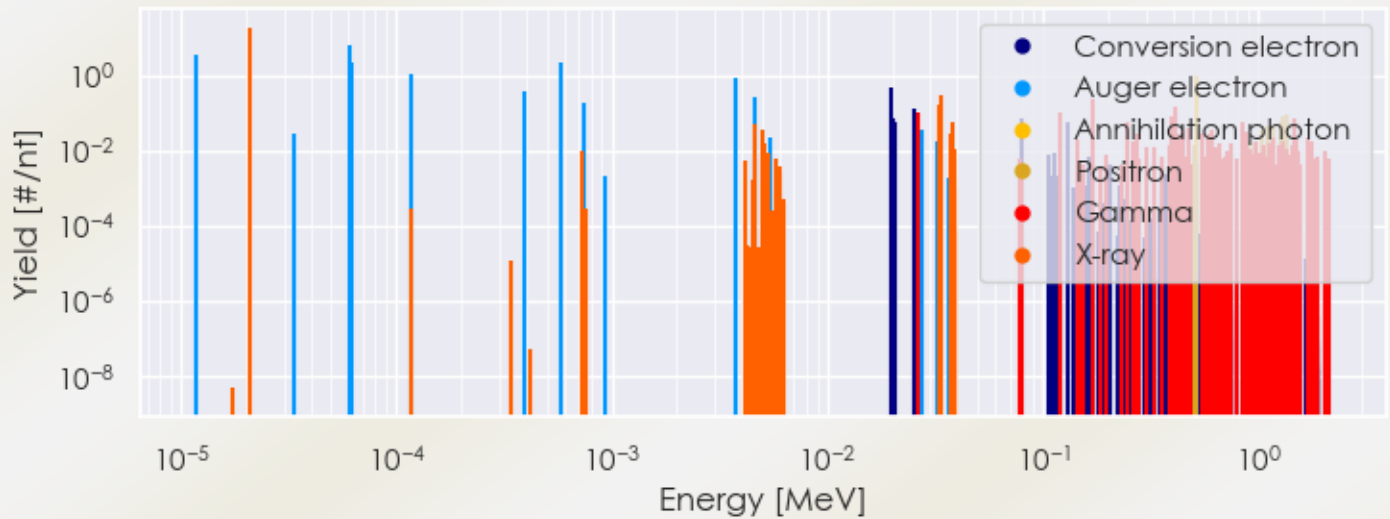
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.61533 [MeV]
Mean photon energy: 1.62671 [MeV]
Air kerma rate constant, Γ_{10} : 4.202×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.066×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 9.859×10^{-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, $\Delta_{\beta, \beta^+, e^-}$: 9.859×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.606×10^{-13} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

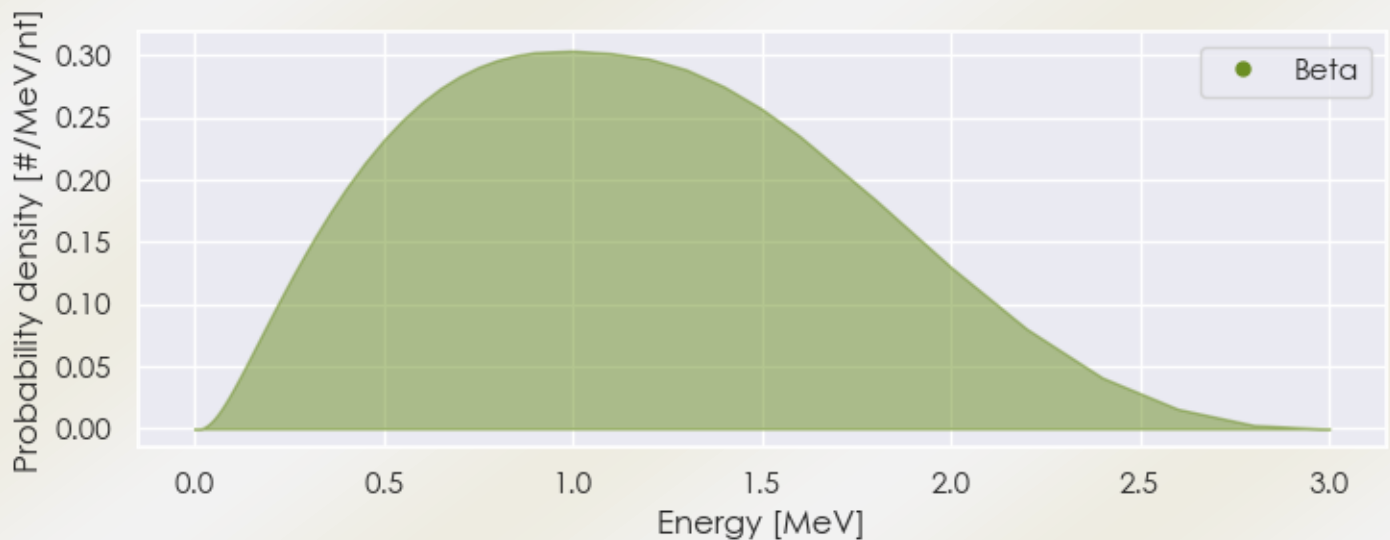
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Ce-131 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ce-131%20Summary%20Spectrum.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/Ce-131 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ce-131%20Beta%20Spectrum.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/Ce-131 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ce-131%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
2.10581e-05	1.879e+01	X-ray
4.63652e-03	5.096e-02	X-ray
5.03753e-03	3.450e-02	X-ray
5.11912e-03	1.521e-02	X-ray
2.62000e-02	9.546e-02	Gamma
3.30405e-02	1.553e-01	X-ray
3.34591e-02	2.851e-01	X-ray
3.77381e-02	2.748e-02	X-ray
3.78202e-02	5.324e-02	X-ray
3.87359e-02	1.135e-02	X-ray
1.19180e-01	9.768e-02	Gamma
1.45410e-01	2.042e-02	Gamma
1.69420e-01	2.220e-01	Gamma
2.44850e-01	5.328e-02	Gamma
2.64200e-01	1.776e-02	Gamma
2.71600e-01	2.664e-02	Gamma
3.03000e-01	1.154e-02	Gamma
3.26900e-01	1.221e-02	Gamma
3.90800e-01	1.332e-02	Gamma
3.92500e-01	3.330e-02	Gamma
3.95280e-01	7.770e-02	Gamma
4.03600e-01	1.865e-02	Gamma
4.14250e-01	1.510e-01	Gamma
4.21490e-01	2.908e-02	Gamma
4.33700e-01	2.575e-02	Gamma
4.42740e-01	3.552e-02	Gamma
4.75860e-01	3.996e-02	Gamma
5.11000e-01	9.634e-01	Annihilation photon

5.47930e-01	2.620e-02	Gamma
5.83800e-01	2.242e-02	Gamma
5.98500e-01	2.620e-02	Gamma
6.02870e-01	3.330e-02	Gamma
6.07600e-01	1.709e-02	Gamma
6.14600e-01	1.177e-02	Gamma
6.34930e-01	1.110e-02	Gamma
6.44700e-01	1.177e-02	Gamma
6.57240e-01	1.598e-02	Gamma
7.50600e-01	1.554e-02	Gamma
8.35800e-01	5.328e-02	Gamma
8.66400e-01	1.954e-02	Gamma
8.86100e-01	3.130e-02	Gamma
9.11300e-01	1.088e-02	Gamma
9.64900e-01	1.687e-02	Gamma
1.06060e+00	1.399e-02	Gamma
1.13120e+00	1.510e-02	Gamma
1.16680e+00	2.309e-02	Gamma
1.23870e+00	1.443e-02	Gamma
1.30240e+00	1.776e-02	Gamma
1.35760e+00	1.066e-02	Gamma
1.44940e+00	1.310e-02	Gamma
1.46968e+00	7.326e-02	Gamma
1.48850e+00	1.976e-02	Gamma
1.69420e+00	2.242e-02	Gamma
1.77450e+00	1.709e-02	Gamma
5.04863e-01	1.412e-02	Positron
9.01518e-01	1.714e-02	Positron
9.52964e-01	1.513e-02	Positron
1.02938e+00	3.529e-02	Positron
1.10053e+00	4.437e-02	Positron
1.15948e+00	3.025e-02	Positron
1.16840e+00	4.235e-02	Positron
1.17715e+00	3.428e-02	Positron
1.28139e+00	5.849e-02	Positron
1.30464e+00	8.168e-02	Positron
1.35989e+00	9.075e-02	Positron
1.18532e-05	3.299e+00	Auger electron

3.33700e-05	2.719e-02	Auger electron
6.10075e-05	6.489e+00	Auger electron
6.26841e-05	2.153e+00	Auger electron
1.17461e-04	1.013e+00	Auger electron
3.91759e-04	3.900e-01	Auger electron
5.82744e-04	2.053e+00	Auger electron
7.37342e-04	1.788e-01	Auger electron
3.77139e-03	8.026e-01	Auger electron
4.59391e-03	2.670e-01	Auger electron
5.45473e-03	2.132e-02	Auger electron
1.99582e-02	4.959e-01	Conversion electron
2.02975e-02	7.484e-02	Conversion electron
2.07162e-02	5.518e-02	Conversion electron
2.50773e-02	1.313e-01	Conversion electron
2.62000e-02	3.600e-02	Conversion electron
2.73123e-02	3.567e-02	Auger electron
3.21336e-02	1.669e-02	Auger electron
8.02370e-02	7.252e-02	Conversion electron
1.30477e-01	5.310e-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