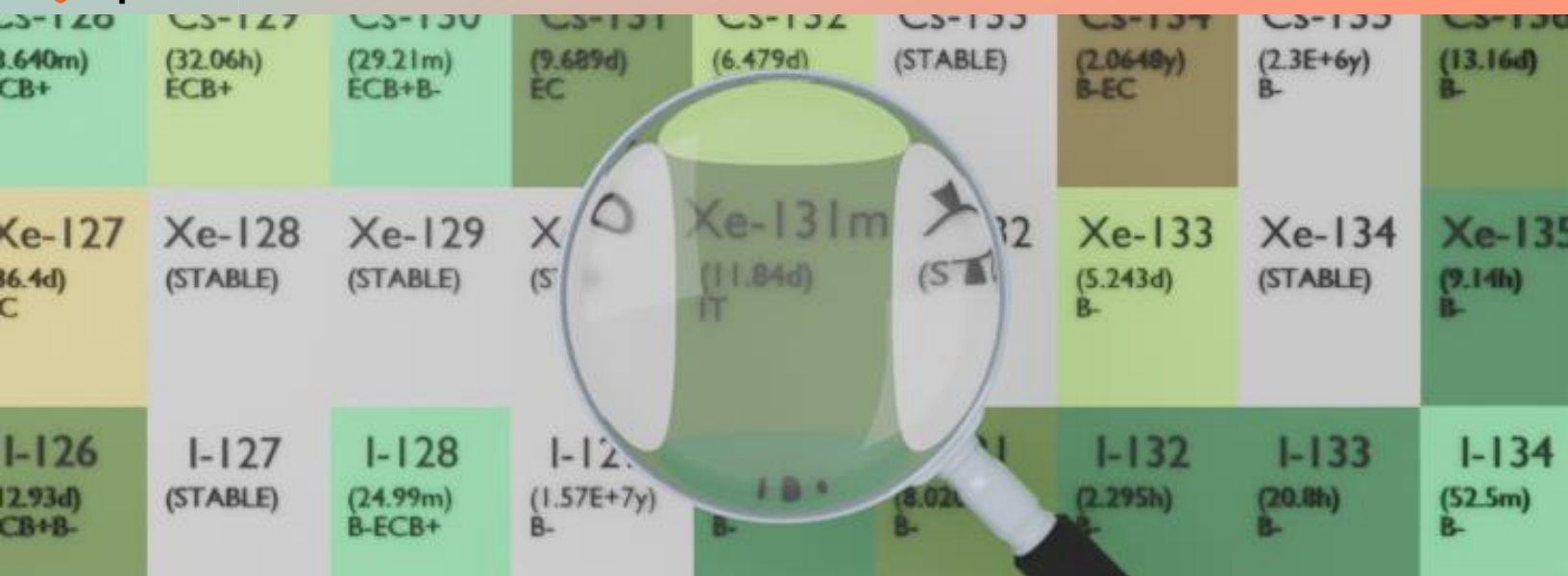




XENON-131M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Xe-131m
Atomic number (Z): 54
Mass number (A): 131
Neutron number (N): 77

RADIOACTIVE DECAY

Decay modes: Internal transition
Half-life: 11.84 [d]
Decay constant: 6.7758×10^{-7} [1/s]
Daughters: Xe-131 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.14704 [MeV]
Mean photon energy: 0.02057 [MeV]
Air kerma rate constant, Γ_{10} : 3.297×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.297×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.356×10^{-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, $\Delta_{\beta,\beta^+,e^-}$: 2.356×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.296×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

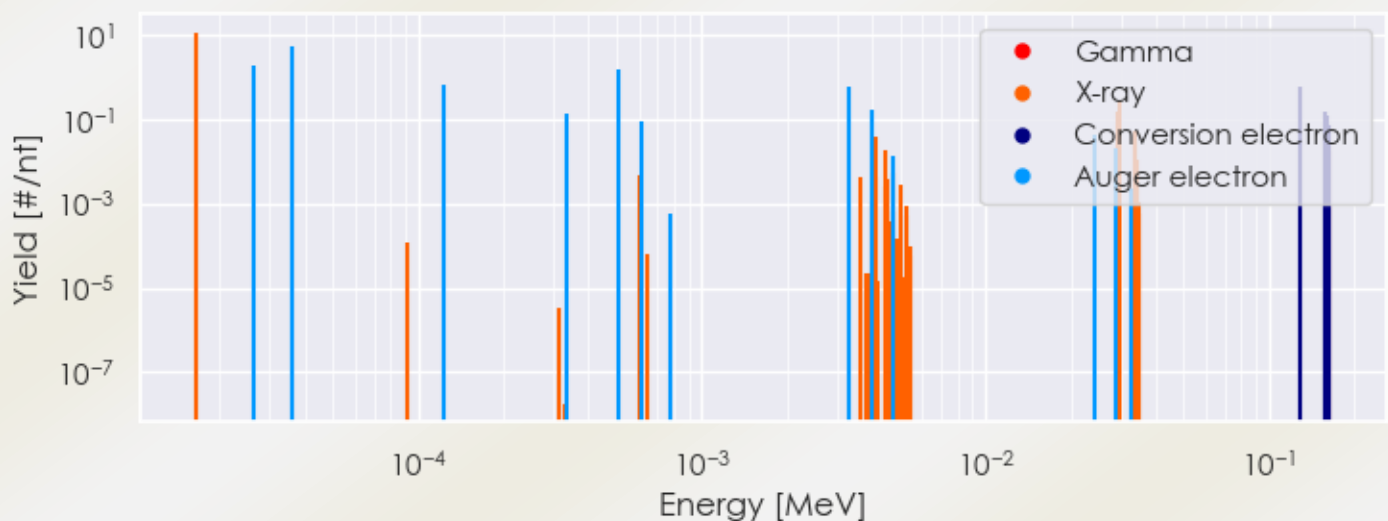
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

Energy [MeV]	Yield [#]/nt] if > 0.01	Radiation type
1.66194e-05	1.161e+01	X-ray
4.09719e-03	3.734e-02	X-ray
4.41300e-03	1.919e-02	X-ray
2.94521e-02	1.587e-01	X-ray
2.97812e-02	2.940e-01	X-ray
3.35665e-02	2.759e-02	X-ray
3.36295e-02	5.350e-02	X-ray
3.44080e-02	1.128e-02	X-ray
1.63930e-01	1.950e-02	Gamma
2.62208e-05	1.819e+00	Auger electron
3.62500e-05	5.518e+00	Auger electron
1.23213e-04	6.897e-01	Auger electron
3.32250e-04	1.379e-01	Auger electron
5.05475e-04	1.502e+00	Auger electron
6.18291e-04	8.615e-02	Auger electron
3.32467e-03	5.882e-01	Auger electron
4.00246e-03	1.745e-01	Auger electron
4.70763e-03	1.326e-02	Auger electron
2.44715e-02	4.463e-02	Auger electron
2.86854e-02	1.996e-02	Auger electron
1.29374e-01	6.201e-01	Conversion electron
1.58513e-01	1.436e-01	Conversion electron
1.58826e-01	3.297e-02	Conversion electron
1.59155e-01	1.208e-01	Conversion electron
1.63003e-01	6.876e-02	Conversion electron
1.63930e-01	1.681e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6