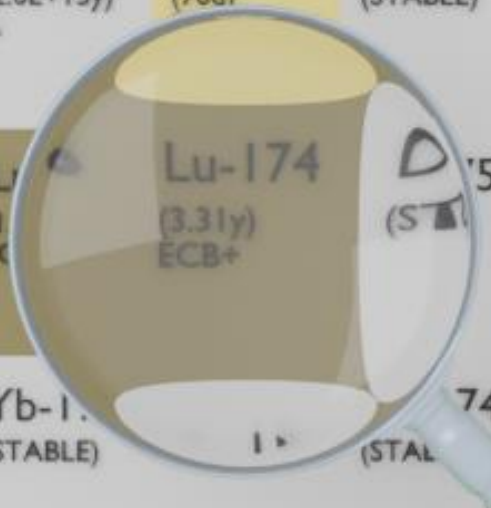




Lu-170 (0.012d) EC+	Lu-171 (8.24d) ECB+	Lu-172 (6.70d) ECB+	Lu-174 (3.31y) ECB+	Lu-175 (70d) ECB+	Lu-176 (3.85E+10y) B-	Lu-177 (6.647d) B-	Lu-178 (28.4m) B-
Yb-169 (32.026d) EC	Yb-170 (STABLE)	Yb-171 (STABLE)	Yb-174 (STABLE)	Yb-175 (4.185d) B-	Yb-176 (STABLE)	Yb-177 (1.911h) B-	Yb-178 (STABLE)

LUTETIUM-174

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Lu-174
Atomic number (Z): 71
Mass number (A): 174
Neutron number (N): 103

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 3.31 [y]
Decay constant: $6.6359\text{e-}09$ [1/s]
Daughters: Yb-174 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04582 [MeV]
Mean photon energy: 0.11625 [MeV]
Air kerma rate constant, Γ_{10} : $4.567\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $4.576\text{e-}18$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $7.341\text{e-}15$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

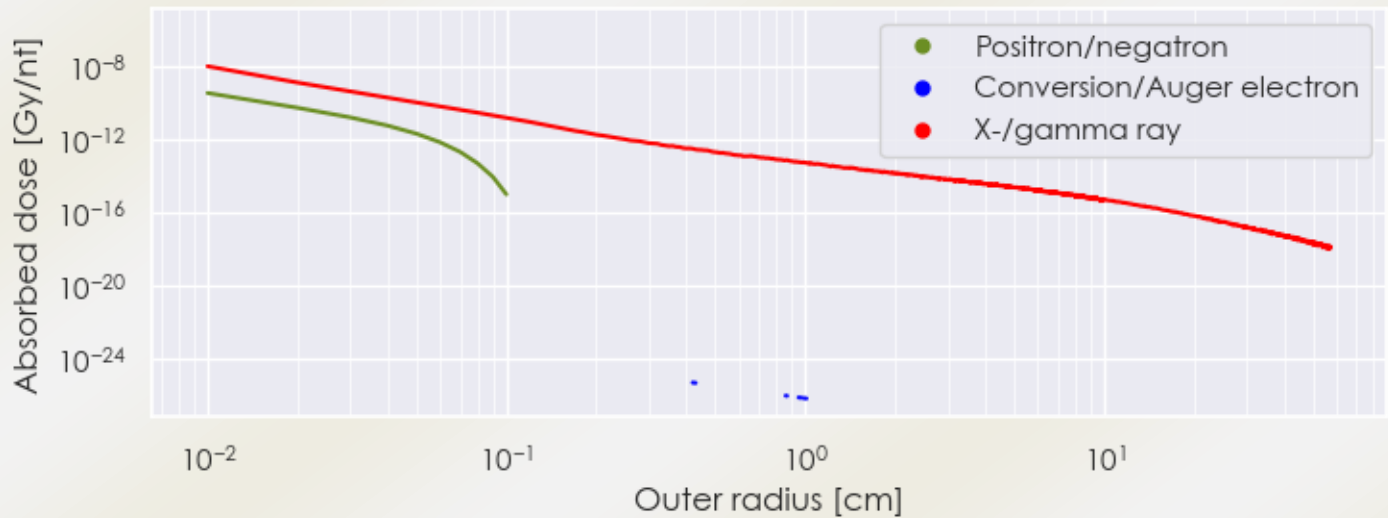
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 7.341×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.863×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

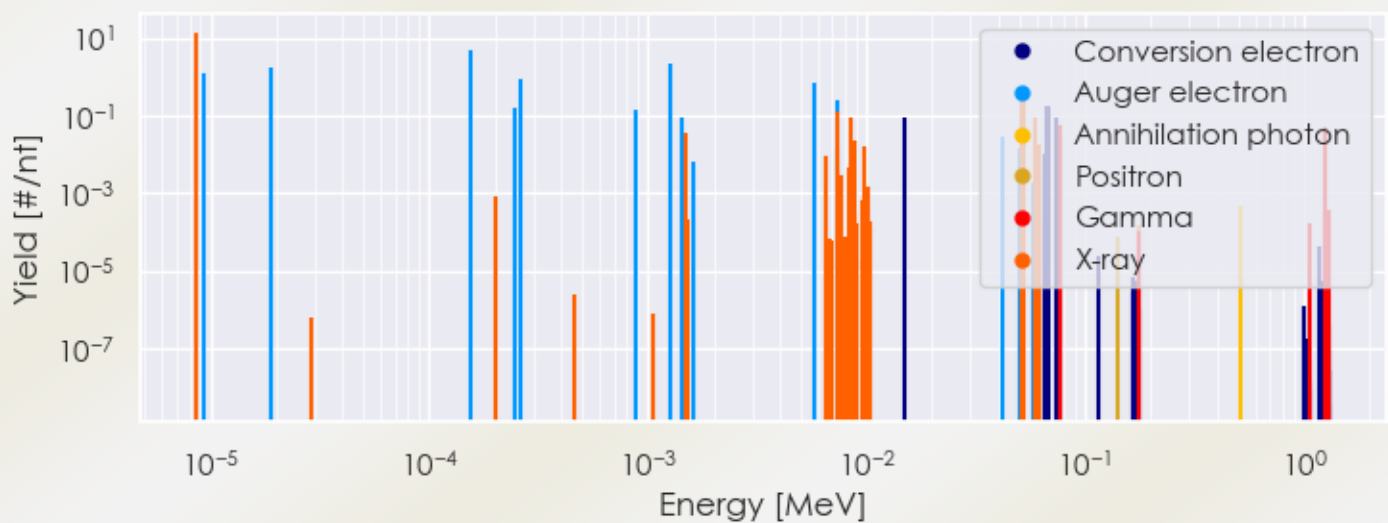
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Lu-174 DPK.csv

SUMMARY SPECTRA (PLOT)

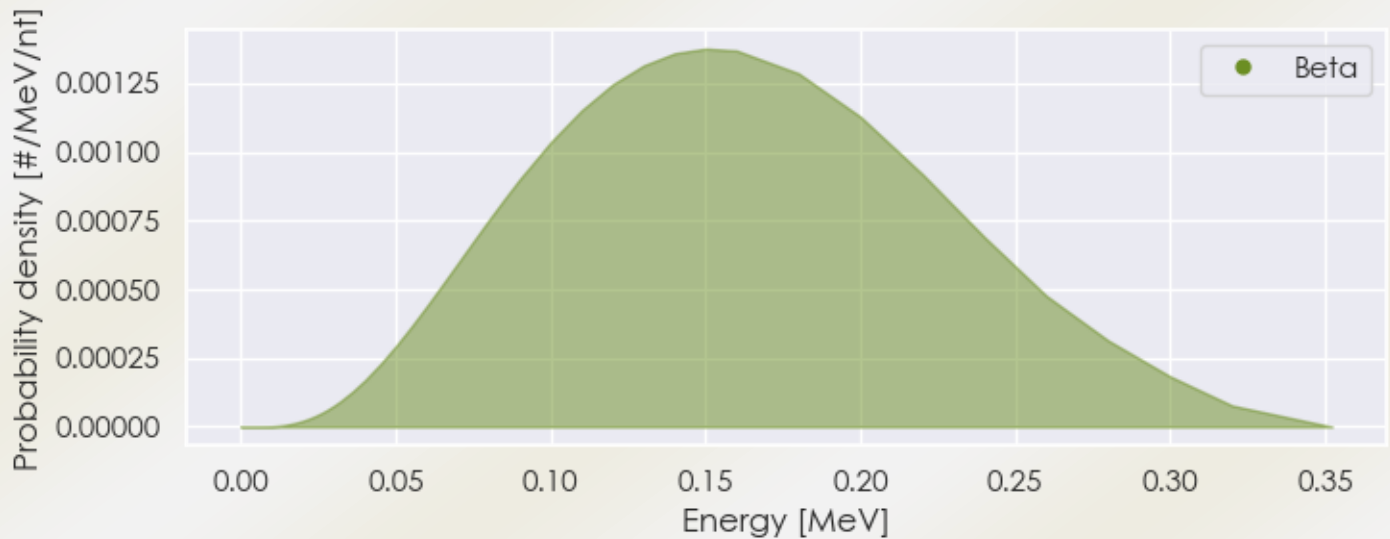
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Lu-174 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/Lu-174 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/Lu-174 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
8.64763e-06	1.419e+01	X-ray
1.50196e-03	3.503e-02	X-ray
7.35570e-03	1.437e-02	X-ray
7.40529e-03	1.268e-01	X-ray
8.41451e-03	9.318e-02	X-ray
8.74937e-03	2.166e-02	X-ray
9.79888e-03	1.660e-02	X-ray
5.14483e-02	2.385e-01	X-ray
5.25072e-02	4.204e-01	X-ray
5.92804e-02	4.430e-02	X-ray

5.95058e-02	8.561e-02	X-ray
6.11060e-02	1.906e-02	X-ray
7.64680e-02	5.926e-02	Gamma
1.24185e+00	5.140e-02	Gamma
9.39916e-06	1.240e+00	Auger electron
1.88615e-05	1.757e+00	Auger electron
1.54775e-04	5.135e+00	Auger electron
2.46058e-04	1.556e-01	Auger electron
2.62579e-04	9.033e-01	Auger electron
8.72731e-04	1.344e-01	Auger electron
1.25746e-03	2.074e+00	Auger electron
1.43075e-03	9.370e-02	Auger electron
5.82488e-03	6.822e-01	Auger electron
7.31725e-03	2.460e-01	Auger electron
8.84015e-03	2.257e-02	Auger electron
1.50270e-02	9.301e-02	Conversion electron
4.19611e-02	2.879e-02	Auger electron
4.99512e-02	1.472e-02	Auger electron
6.64754e-02	1.718e-01	Conversion electron
6.75342e-02	1.755e-01	Conversion electron
7.45328e-02	8.853e-02	Conversion electron
7.64680e-02	2.335e-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