

Lu-165 (10.74m) ECB+	Lu-166 (3.24m) ECB+	Lu-169 (34.06h) ECB+	Lu-170 (16.01h) ECB+	Lu-171 (8.24d) ECB+	Lu-172 (6.70d) ECB+	Lu-173 (1.37y) EC	
Yb-164 (75.8m) C	Yb-165 (9.9m) ECB+	Yb-166 (56.7h) EC	Yb-167 (17.5m) ECB+	Yb-169 (32.0d) EC	Yb-170 (STABLE)	Yb-171 (STABLE)	Yb-172 (STABLE)

LUTETIUM-169

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Lu-169
Atomic number (Z): 71
Mass number (A): 169
Neutron number (N): 98

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 34.06 [h]
Decay constant: 5.6530e-06 [1/s]
Daughters: Yb-169 (100.0%)
Radioactive daughters: Yb-169

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04769 [MeV]
Mean photon energy: 1.31663 [MeV]
Air kerma rate constant, Γ_{10} : 4.580e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 4.585e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 7.641e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 7.641×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.109×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

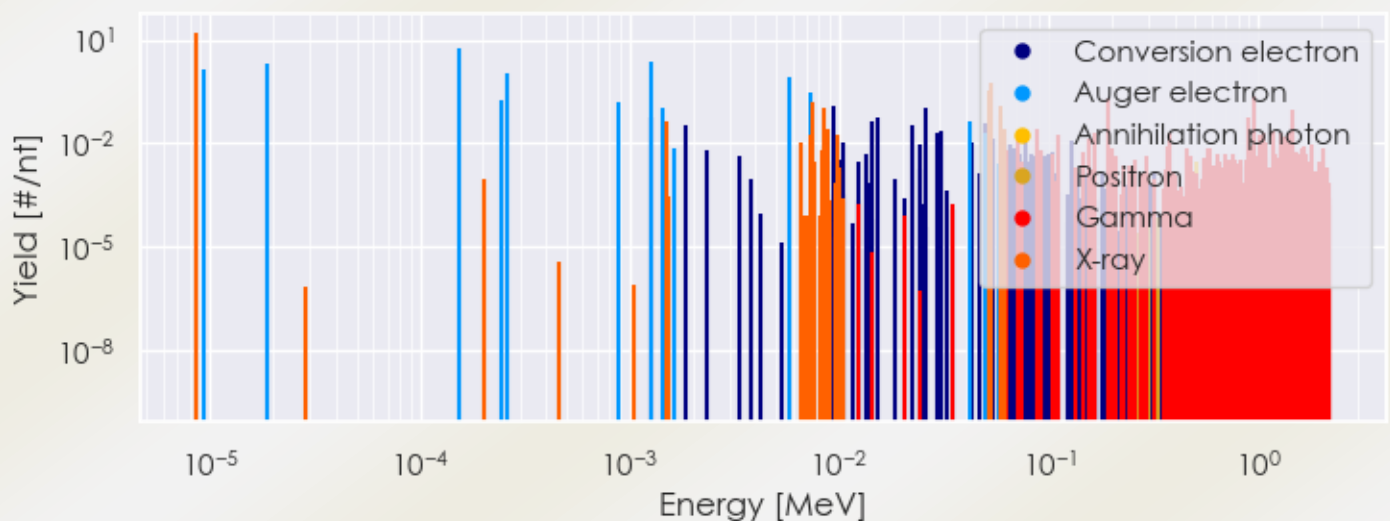
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Lu-169 DPK.csv

SUMMARY SPECTRA (PLOT)

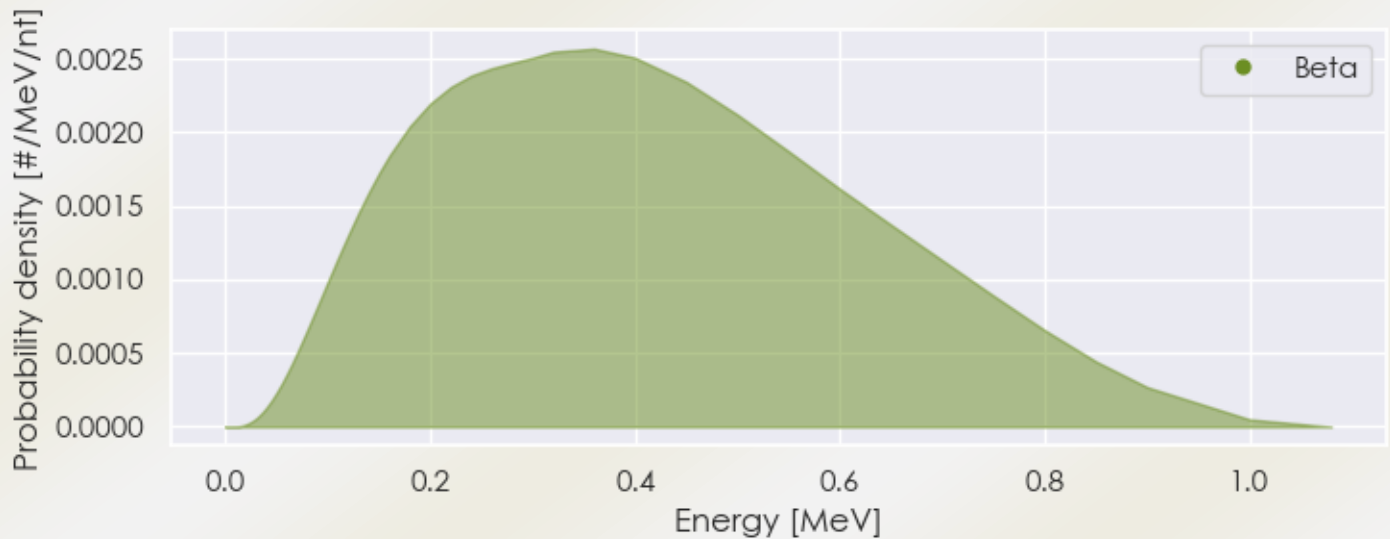
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Lu-169 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-169 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-169 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
8.63738e-06	1.670e+01	X-ray
1.50160e-03	4.120e-02	X-ray
6.56570e-03	1.080e-02	X-ray
7.35570e-03	1.724e-02	X-ray
7.40530e-03	1.522e-01	X-ray
8.41451e-03	1.011e-01	X-ray
8.74937e-03	2.598e-02	X-ray
9.79888e-03	1.801e-02	X-ray
5.14483e-02	3.382e-01	X-ray
5.25072e-02	5.960e-01	X-ray

5.92804e-02	6.281e-02	X-ray
5.95058e-02	1.214e-01	X-ray
6.10550e-02	1.397e-02	X-ray
6.11060e-02	2.702e-02	X-ray
7.08814e-02	1.701e-02	Gamma
8.73836e-02	2.457e-02	Gamma
1.10929e-01	1.750e-02	Gamma
1.56898e-01	1.406e-02	Gamma
1.65013e-01	1.968e-02	Gamma
1.91214e-01	2.059e-01	Gamma
3.78624e-01	2.108e-02	Gamma
8.89753e-01	5.359e-02	Gamma
9.60622e-01	2.340e-01	Gamma
1.00747e+00	1.804e-02	Gamma
1.06028e+00	1.909e-02	Gamma
1.07379e+00	1.123e-02	Gamma
1.07828e+00	1.072e-02	Gamma
1.18488e+00	2.223e-02	Gamma
1.28328e+00	2.106e-02	Gamma
1.29059e+00	1.144e-02	Gamma
1.33882e+00	1.622e-02	Gamma
1.37904e+00	2.106e-02	Gamma
1.37904e+00	1.076e-02	Gamma
1.39227e+00	1.196e-02	Gamma
1.44974e+00	9.922e-02	Gamma
1.46339e+00	1.509e-02	Gamma
1.46684e+00	3.323e-02	Gamma
9.41883e-06	1.459e+00	Auger electron
1.88616e-05	2.069e+00	Auger electron
1.54781e-04	6.041e+00	Auger electron
2.46438e-04	1.829e-01	Auger electron
2.61685e-04	1.057e+00	Auger electron
8.83334e-04	1.670e-01	Auger electron
1.25679e-03	2.441e+00	Auger electron
1.27800e-03	5.723e-02	Conversion electron
1.42956e-03	1.102e-01	Auger electron
1.85600e-03	3.582e-02	Conversion electron
5.81444e-03	8.015e-01	Auger electron

7.30687e-03	2.890e-01	Auger electron
8.82988e-03	2.651e-02	Auger electron
9.44040e-03	1.255e-01	Conversion electron
1.03748e-02	1.041e-02	Conversion electron
1.42074e-02	4.504e-02	Conversion electron
1.52662e-02	5.663e-02	Conversion electron
2.22648e-02	3.254e-02	Conversion electron
2.59426e-02	1.022e-01	Conversion electron
2.93282e-02	2.065e-02	Conversion electron
3.05327e-02	2.193e-02	Conversion electron
4.19611e-02	4.082e-02	Auger electron
4.28545e-02	1.054e-02	Conversion electron
4.94881e-02	3.743e-02	Conversion electron
4.99512e-02	2.086e-02	Auger electron
5.27264e-02	1.346e-02	Conversion electron
5.37852e-02	1.382e-02	Conversion electron
6.04274e-02	1.747e-02	Conversion electron
7.69296e-02	1.421e-02	Conversion electron
1.29773e-01	1.237e-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