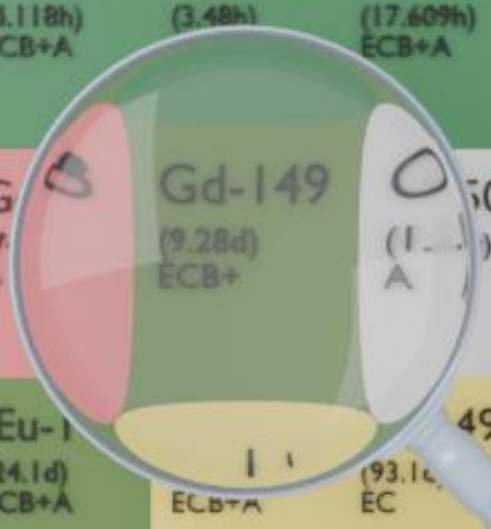




10-146 (23s) ECB+	10-147 (1.64h) ECB+	10-148 (60m) ECB+	10-149 (4.118h) ECB+A	10-150 (3.48h) ECB+	10-151 (17.609h) ECB+A	10-152 (17.5h) ECB+	10-153 (2.34d) ECB+	10-154 (21.5h) ECB+
Gd-145 (23.0m) ECB+	Gd-146 (48.27d) EC	Gd-147 (38.1h) ECB+	Gd-149 (9.28d) ECB+	Gd-150 (1.1h) A	Gd-151 (124d) ECA	Gd-152 (1.08E+14y) A	Gd-153 (240.4d) EC	Gd-154 (1.1E+15y) A
Eu-144 (10.2s) ECB+	Eu-145 (5.93d) ECB+	Eu-146 (4.61d) ECB+	Eu-147 (24.1d) ECB+A	Eu-148 (93.1d) EC	Eu-149 (36.9y) ECB+	Eu-150 (36.9y) ECB+	Eu-151 (1.1E+15y) A	Eu-152 (13.537y) ECB+B-

GADOLINIUM-149

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Gd-149
Atomic number (Z): 64
Mass number (A): 149
Neutron number (N): 85

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 9.28 [d]
Decay constant: $8.6450\text{e-}07$ [1/s]
Daughters: Eu-149 (100.0%)
Radioactive daughters: Eu-149

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.06859 [MeV]
Mean photon energy: 0.52923 [MeV]
Air kerma rate constant, Γ_{10} : $2.088\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $2.088\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.099\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

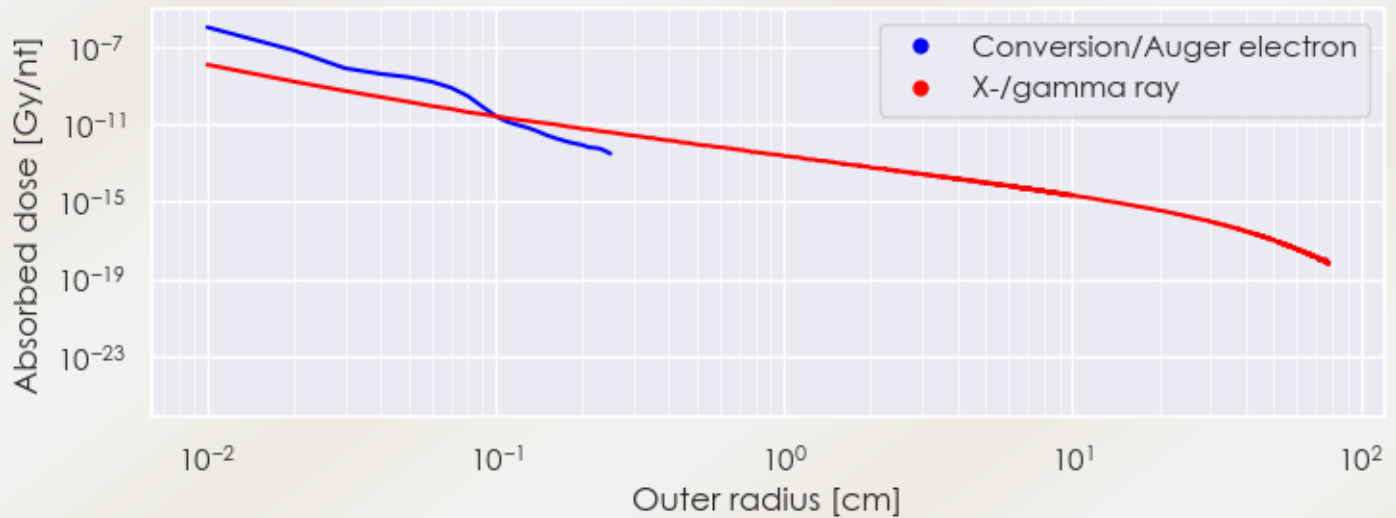
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-\beta+,e-}$: 1.099e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 8.479e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

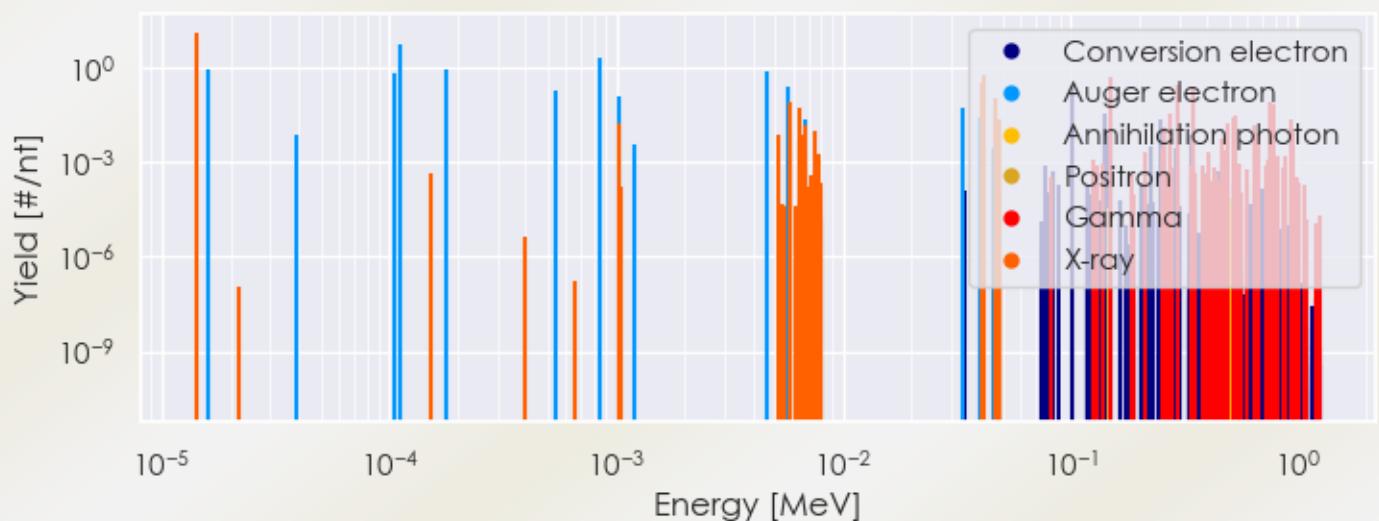
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Gd-149 DPK.csv

SUMMARY SPECTRA (PLOT)

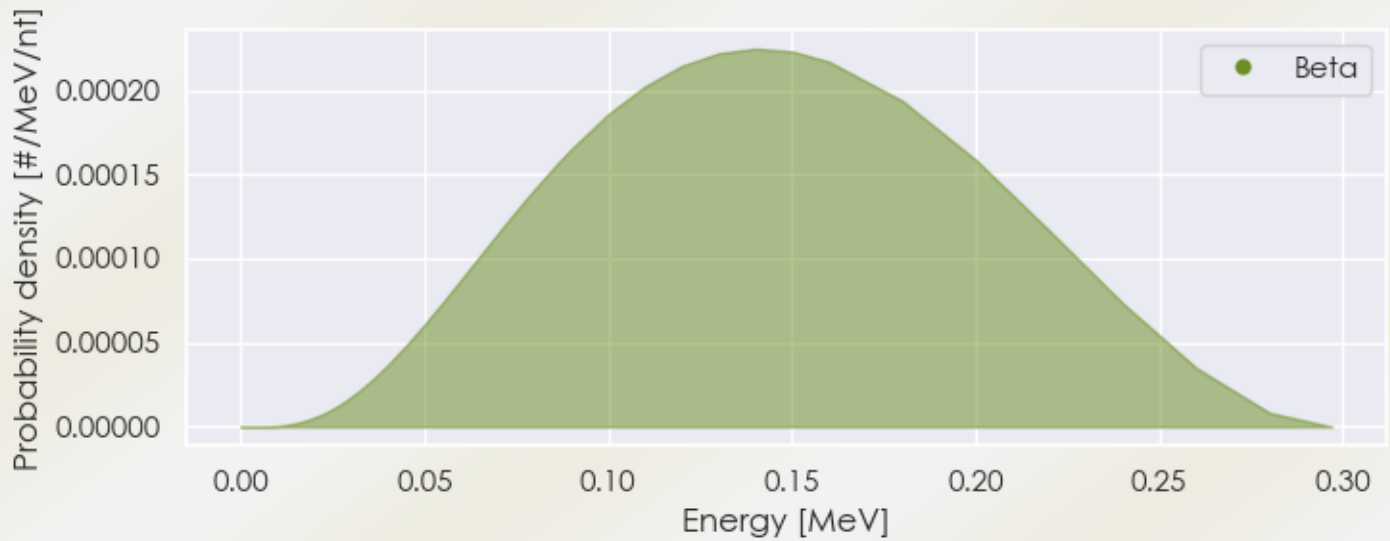
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Gd-149 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/Gd-149 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/Gd-149 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.42285e-05	1.303e+01	X-ray
1.02954e-03	1.734e-02	X-ray
5.83100e-03	8.284e-02	X-ray
6.45760e-03	5.322e-02	X-ray
6.82634e-03	1.388e-02	X-ray
4.09430e-02	3.063e-01	X-ray
4.15992e-02	5.524e-01	X-ray
4.69640e-02	5.576e-02	X-ray
4.70984e-02	1.079e-01	X-ray

4.82780e-02	1.215e-02	X-ray
4.83077e-02	2.357e-02	X-ray
1.49735e-01	4.820e-01	Gamma
2.60736e-01	1.321e-02	Gamma
2.72321e-01	3.215e-02	Gamma
2.98634e-01	2.863e-01	Gamma
3.46651e-01	2.391e-01	Gamma
4.96383e-01	1.658e-02	Gamma
5.16545e-01	2.694e-02	Gamma
5.34295e-01	3.070e-02	Gamma
6.45315e-01	1.460e-02	Gamma
7.48601e-01	8.218e-02	Gamma
7.88876e-01	7.341e-02	Gamma
9.38610e-01	2.391e-02	Gamma
1.58398e-05	9.233e-01	Auger electron
1.05241e-04	6.320e-01	Auger electron
1.13009e-04	5.623e+00	Auger electron
1.79251e-04	8.959e-01	Auger electron
5.44694e-04	1.823e-01	Auger electron
8.54084e-04	1.918e+00	Auger electron
1.02658e-03	1.183e-01	Auger electron
4.62131e-03	7.075e-01	Auger electron
5.72291e-03	2.437e-01	Auger electron
6.85887e-03	2.103e-02	Auger electron
3.36229e-02	5.022e-02	Auger electron
3.97850e-02	2.465e-02	Auger electron
1.01167e-01	2.447e-01	Conversion electron
1.41717e-01	3.188e-02	Conversion electron
2.50066e-01	2.200e-02	Conversion electron
2.98083e-01	4.659e-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