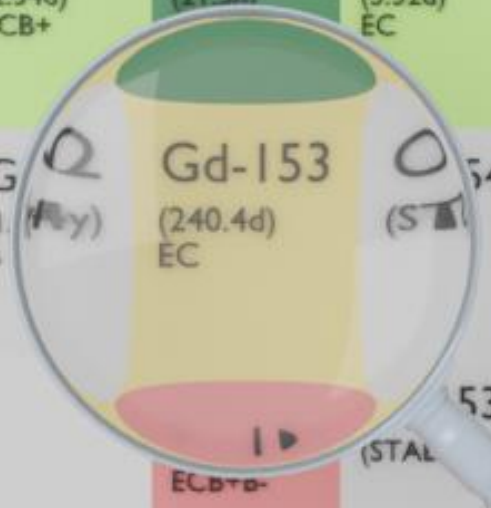




10-150 (3.48h) ECB+A	10-151 (17.609h) ECB+A	10-152 (17.5h) ECB+	10-153 (2.34d) ECB+	10-154 (21.5h) EC	10-155 (5.32d) EC	10-156 (5.35d) EC	10-157 (71y) EC	10-158 (180y) ECB-
Gd-149 (2.28d) CB+	Gd-150 (1.79E+6y) A	Gd-151 (124d) ECA	Gd-153 (240.4d) EC	Gd-154 (1.1E+5y) A	Gd-155 (STABLE)	Gd-156 (STABLE)	Gd-157 (STABLE)	Gd-158 (STABLE)
Eu-148 (54.5d) CB+A	Eu-149 (93.1d) EC	Eu-150 (36.9y) ECB+	Eu-153 (STABLE)	Eu-154 (8.593y) B-EC	Eu-155 (4.7611y) B-	Eu-156 (15.19d) B-		

GADOLINIUM-153

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Gd-153
Atomic number (Z): 64
Mass number (A): 153
Neutron number (N): 89

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 240.4 [d]
Decay constant: $3.3372\text{e-}08$ [1/s]
Daughters: Eu-153 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04376 [MeV]
Mean photon energy: 0.10566 [MeV]
Air kerma rate constant, Γ_{10} : $5.476\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $5.476\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $7.011\text{e-}15$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

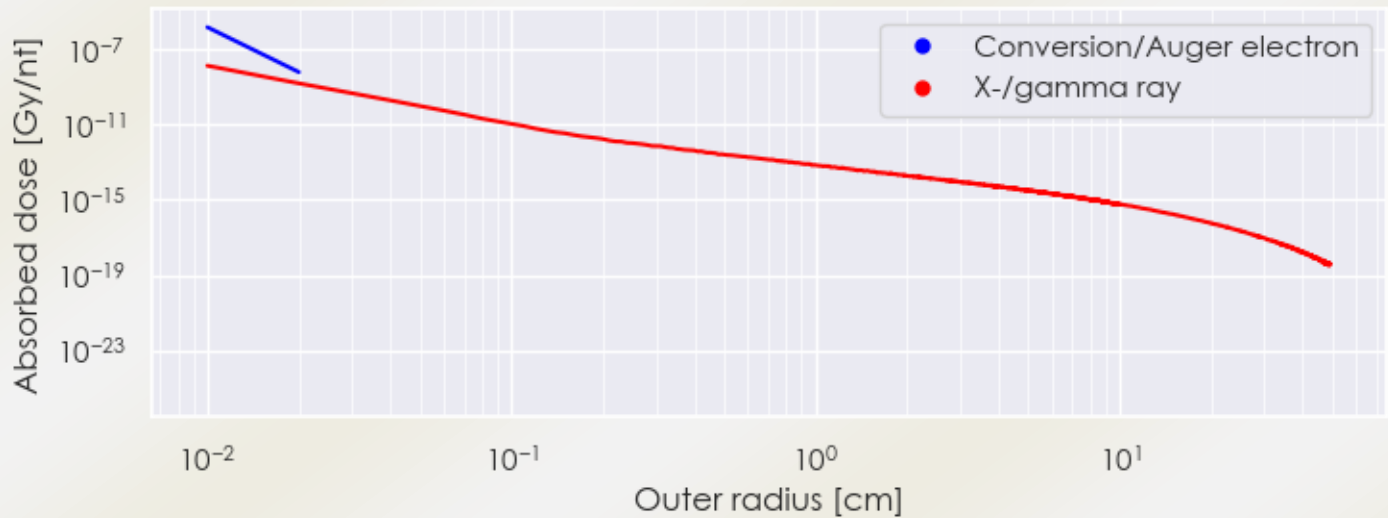
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 7.011×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.693×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

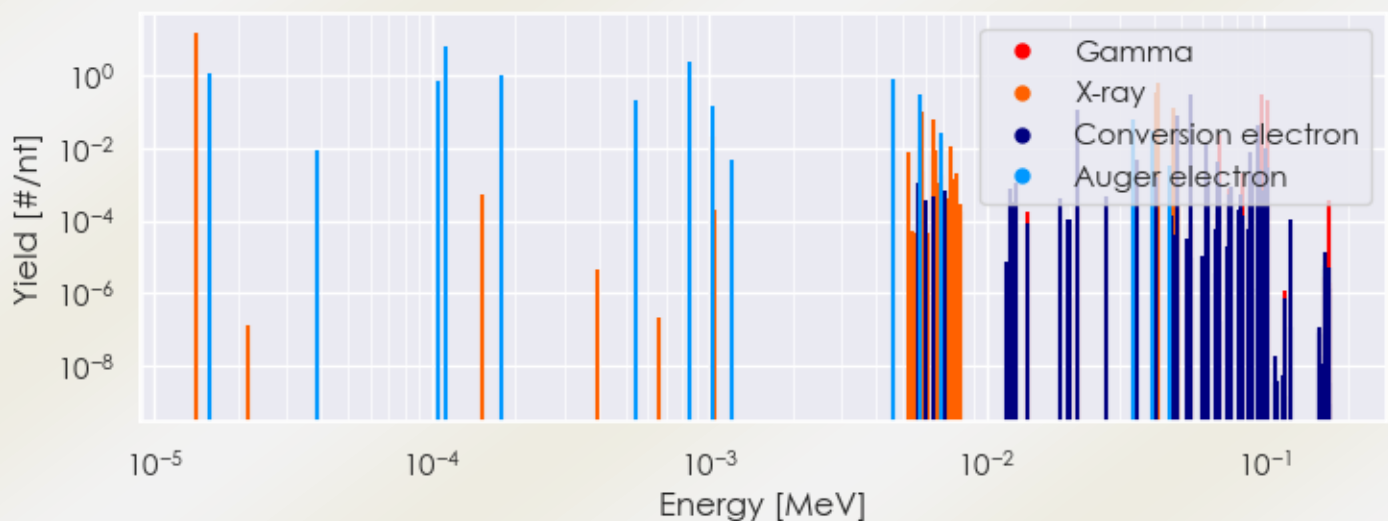
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Gd-153 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-153 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/Gd-153 Summary Spectrum.csv

Energy [MeV]	Yield [#]/nt] if > 0.01	Radiation type
1.42291e-05	1.511e+01	X-ray
1.02960e-03	2.009e-02	X-ray
5.80160e-03	1.082e-02	X-ray
5.83100e-03	9.572e-02	X-ray
6.45760e-03	6.170e-02	X-ray
6.82634e-03	1.604e-02	X-ray
7.47704e-03	1.066e-02	X-ray
4.09430e-02	3.501e-01	X-ray
4.15992e-02	6.315e-01	X-ray
4.69640e-02	6.373e-02	X-ray
4.70984e-02	1.233e-01	X-ray
4.82780e-02	1.389e-02	X-ray
4.83077e-02	2.694e-02	X-ray
6.96730e-02	2.419e-02	Gamma
9.74310e-02	2.900e-01	Gamma
1.03180e-01	2.111e-01	Gamma
1.58398e-05	1.071e+00	Auger electron
1.05270e-04	7.329e-01	Auger electron
1.13007e-04	6.520e+00	Auger electron
1.79280e-04	1.040e+00	Auger electron
5.45156e-04	2.133e-01	Auger electron
8.54130e-04	2.222e+00	Auger electron
1.02670e-03	1.370e-01	Auger electron
4.62243e-03	8.195e-01	Auger electron
5.72414e-03	2.823e-01	Auger electron
6.86029e-03	2.436e-02	Auger electron
2.11050e-02	1.105e-01	Conversion electron

3.36229e-02	5.740e-02	Auger electron
3.97850e-02	2.817e-02	Auger electron
4.88630e-02	7.433e-02	Conversion electron
5.46121e-02	3.075e-01	Conversion electron
6.16549e-02	1.427e-02	Conversion electron
9.51620e-02	4.027e-02	Conversion electron
1.01711e-01	1.006e-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