

Sm-147 (1.060E11y) A	Sm-148 (7E+15y) A	Sm-149 (STABLE)	Sm-150 (STABLE)	Sm-151 (90y) B-	Sm-152 (STABLE)	Sm-153 (46.50h) B-	Sm-154 (STABLE)	
Pm-145 (17.7y) ECB-	Pm-146 (5.53y) ECB-	Pm-147 (2.6234y) B-	Pm-148 (5.37y) B-	Pm-149 (53.08h) B-	Pm-150 (2.68y) B-	Pm-151 (28.40h) B-	Pm-152 (4.12m) B-	Pm-153 (5.25m) B-
Nd-144 (2.29E+15y) A	Nd-145 (STABLE)	Nd-146 (STABLE)	Nd-147 (10.98d) B-	Nd-148 (15.1m) B-	Nd-149 (1.72h) B-	Nd-150 (14.1m) B-	Nd-151 (12.44m) B-	Nd-152 (11.4m) B-

PROMETHIUM-149

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pm-149
Atomic number (Z): 61
Mass number (A): 149
Neutron number (N): 88

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 53.08 [h]
Decay constant: 3.6274×10^{-6} [1/s]
Daughters: Sm-149 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.36503 [MeV]
Mean photon energy: 0.01189 [MeV]
Air kerma rate constant, Γ_{10} : 4.433×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 4.433×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.848×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

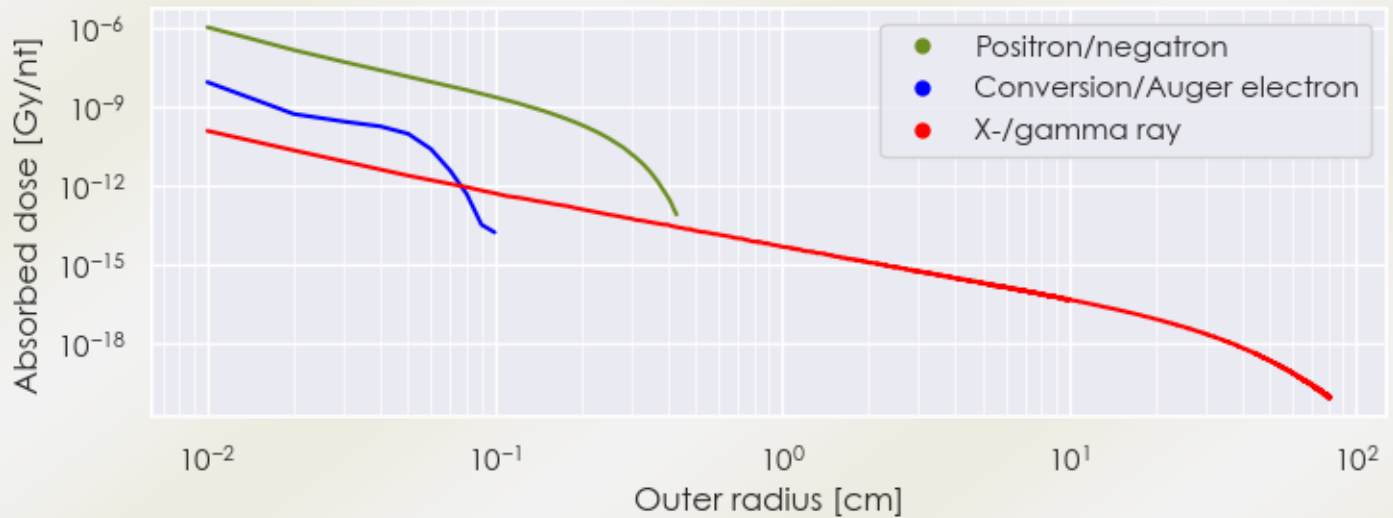
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 5.848e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.905e-15 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

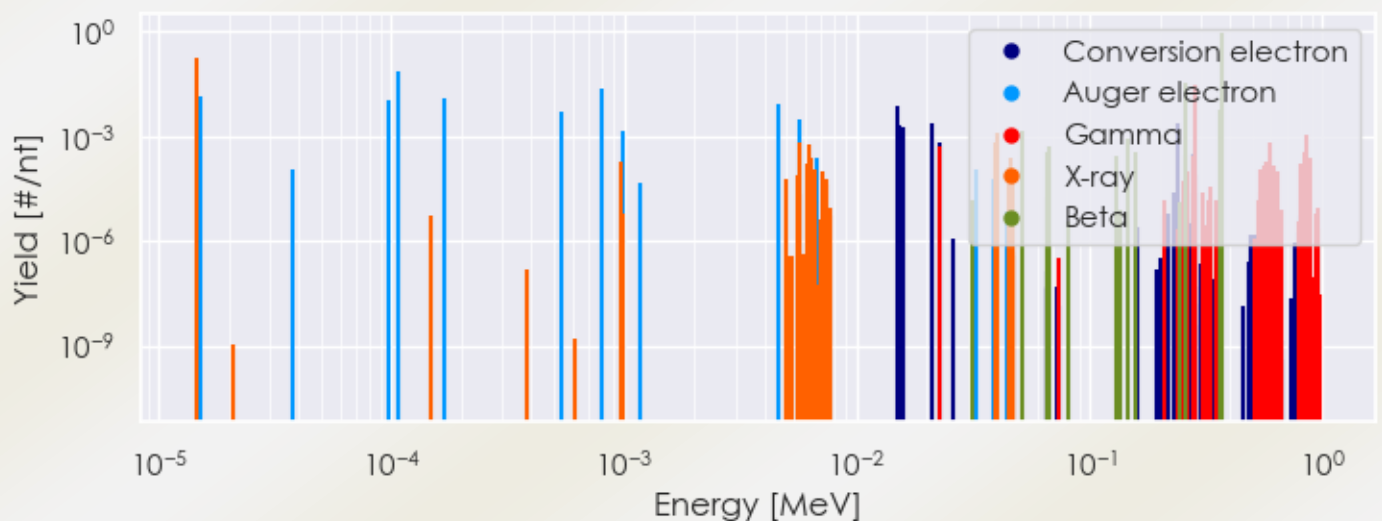
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

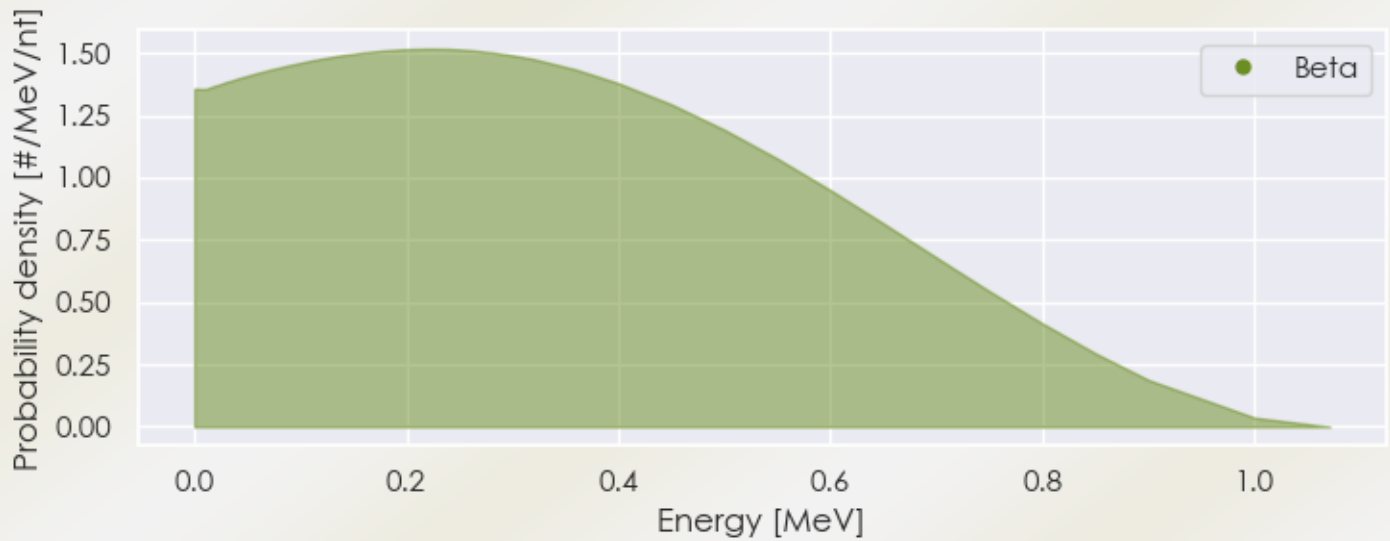
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.45807e-05	1.760e-01	X-ray
2.85950e-01	3.100e-02	Gamma
2.56021e-01	3.390e-02	Beta
3.68907e-01	9.561e-01	Beta
1.51033e-05	1.412e-02	Auger electron
9.68590e-05	1.137e-02	Auger electron
1.06415e-04	7.380e-02	Auger electron
1.69968e-04	1.297e-02	Auger electron
8.08624e-04	2.314e-02	Auger 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