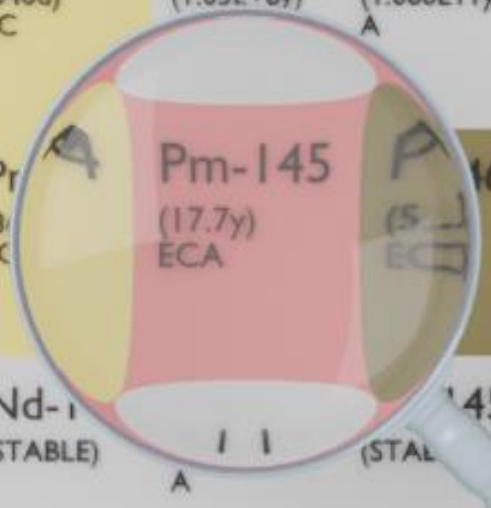




Pm-141 (0.90m) CB+	Pm-142 (40.5s) ECB+	Pm-143 (265d) EC	Pm-144 (340d) EC	Pm-145 (17.7y) ECA	Pm-146 (5.12y) EC	Pm-147 (2.6234y) B-	Pm-148 (5.368d) B-	Pm-149 (53.08h) B-
Nd-140 (3.37d) C	Nd-141 (2.49h) ECB+	Nd-142 (STABLE)	Nd-143 (STABLE)	Nd-144 (STABLE)	Nd-145 (STABLE)	Nd-146 (STABLE)	Nd-147 (10.98d) B-	Nd-148 (STABLE)

PROMETHIUM-145

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pm-145
Atomic number (Z): 61
Mass number (A): 145
Neutron number (N): 84

RADIOACTIVE DECAY

Decay modes: α , Electron capture
Half-life: 17.7 [y]
Decay constant: 1.2410×10^{-9} [1/s]
Daughters: Nd-145 (100.0%), Pr-141 (2.8e-07%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.01258 [MeV]
Mean photon energy: 0.0315 [MeV]
Air kerma rate constant, Γ_{10} : 2.910×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 2.910×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.016×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

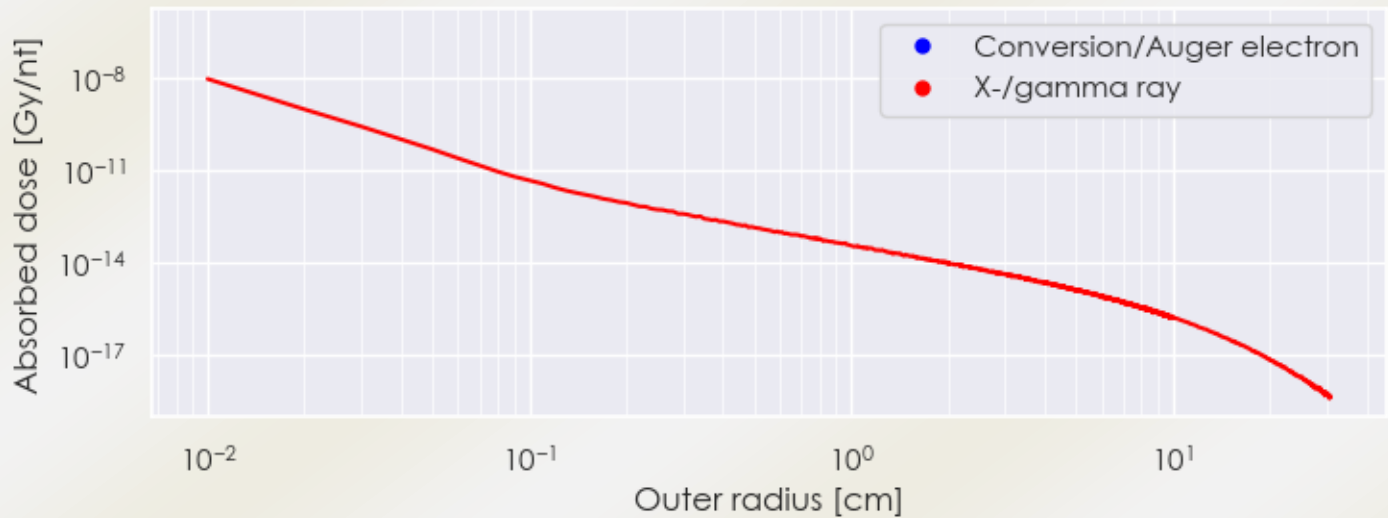
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.016×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.047×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

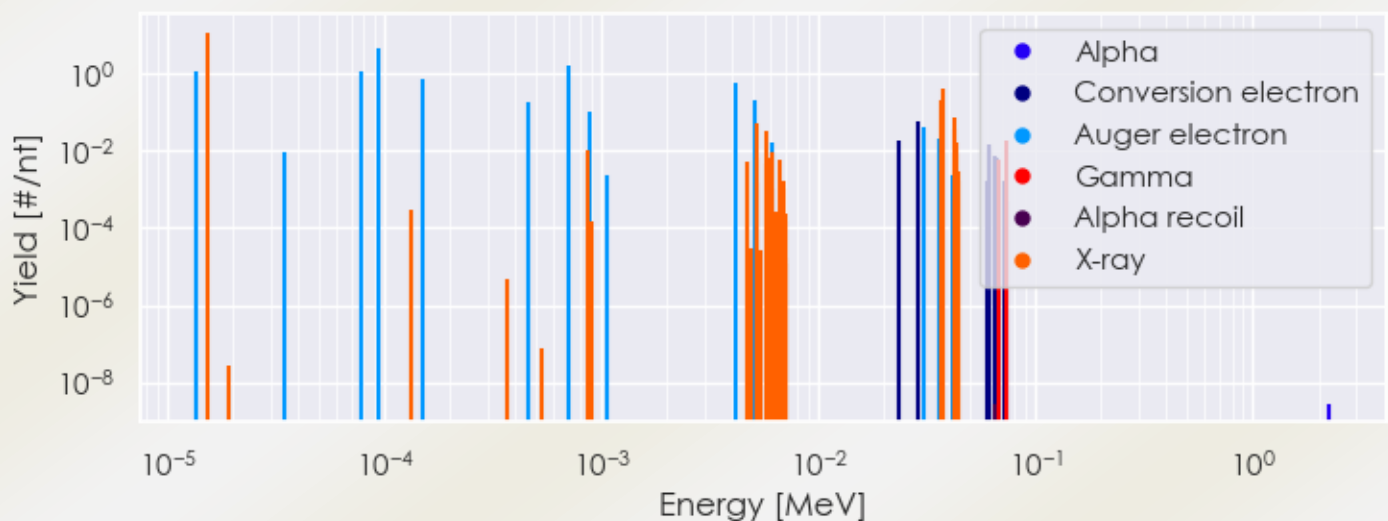
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pm-145 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-145 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/Pm-145 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pm-145%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
1.52068e-05	1.194e+01	X-ray
8.65309e-04	1.041e-02	X-ray
5.21638e-03	5.490e-02	X-ray
5.72010e-03	3.468e-02	X-ray
3.68696e-02	2.163e-01	X-ray
3.73962e-02	3.939e-01	X-ray
4.22041e-02	3.891e-02	X-ray
4.23100e-02	7.530e-02	X-ray
4.33673e-02	1.624e-02	X-ray
7.24000e-02	1.850e-02	Gamma
1.36628e-05	1.198e+00	Auger electron
7.84943e-05	1.215e+00	Auger electron
9.39094e-05	4.532e+00	Auger electron
1.51201e-04	7.160e-01	Auger electron
4.57478e-04	1.787e-01	Auger electron
7.11736e-04	1.574e+00	Auger electron
8.76025e-04	1.085e-01	Auger electron
4.16649e-03	5.949e-01	Auger electron
5.11982e-03	2.002e-01	Auger electron
6.10837e-03	1.668e-02	Auger electron
2.36030e-02	1.814e-02	Conversion electron
2.88030e-02	5.795e-02	Conversion electron
3.03768e-02	4.162e-02	Auger electron
3.58432e-02	1.997e-02	Auger electron
6.04726e-02	1.175e-02	Conversion electron
6.09993e-02	1.386e-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