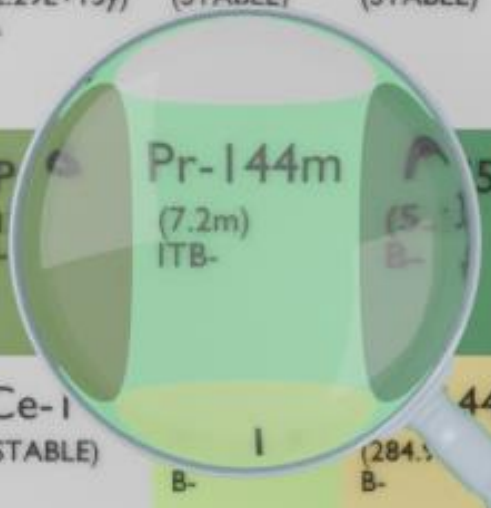




Pr-140 (3.39m) CB+	Pr-141 (STABLE)	Pr-142 (19.12h) B-EC	Pr-144m (7.2m) ITB-	Pr-146 (24.15m) B-	Pr-147 (13.4m) B-	Pr-148 (2.29m) B-
Ce-139 (137.641d) C	Ce-140 (STABLE)	Ce-141 (32.508d) B-	Ce-144 (284.5d) B-	Ce-145 (3.01m) B-		

PRASEODYMIUM-144M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pr-144m
Atomic number (Z): 59
Mass number (A): 144
Neutron number (N): 85

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 7.2 [m]
Decay constant: 1.6045×10^{-3} [1/s]
Daughters: Pr-144 (99.9%), Nd-144 (0.07%)
Radioactive daughters: Pr-144, Nd-144

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.04746 [MeV]
Mean photon energy: 0.01335 [MeV]
Air kerma rate constant, Γ_{10} : 1.255×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.255×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 7.604×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

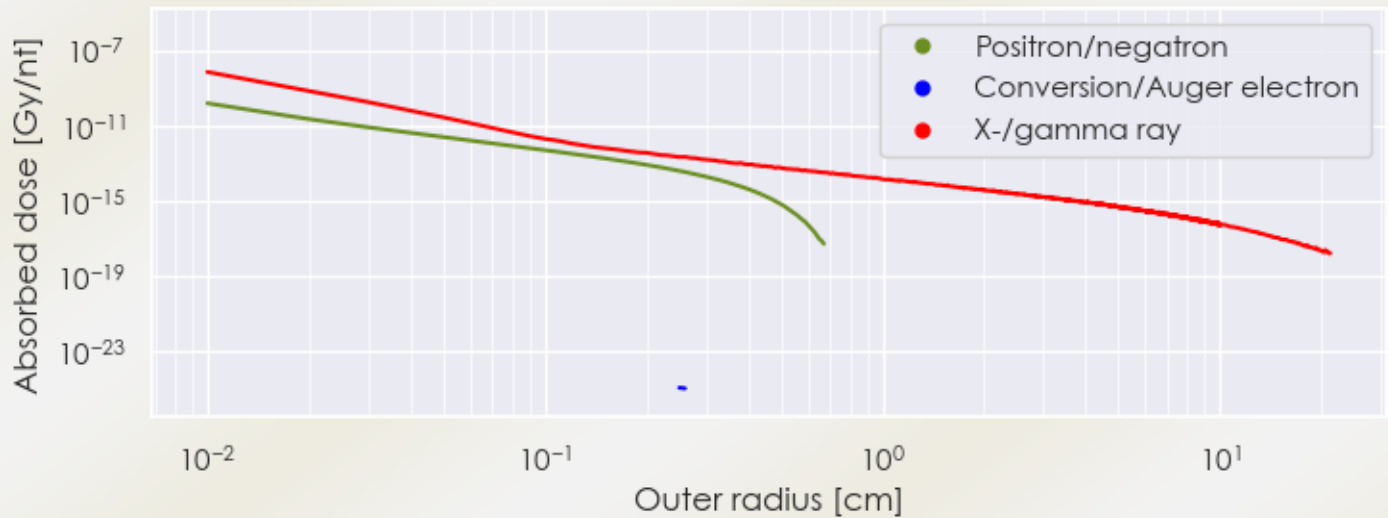
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e^-}$: 7.604×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.139×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

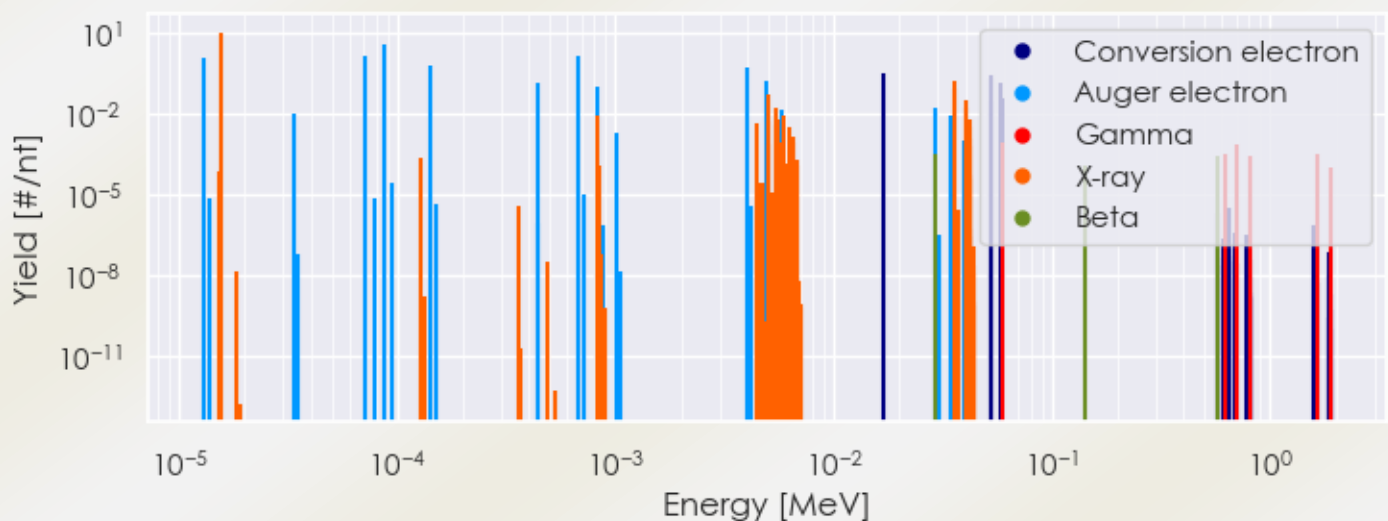
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pr-144m DPK.csv

SUMMARY SPECTRA (PLOT)

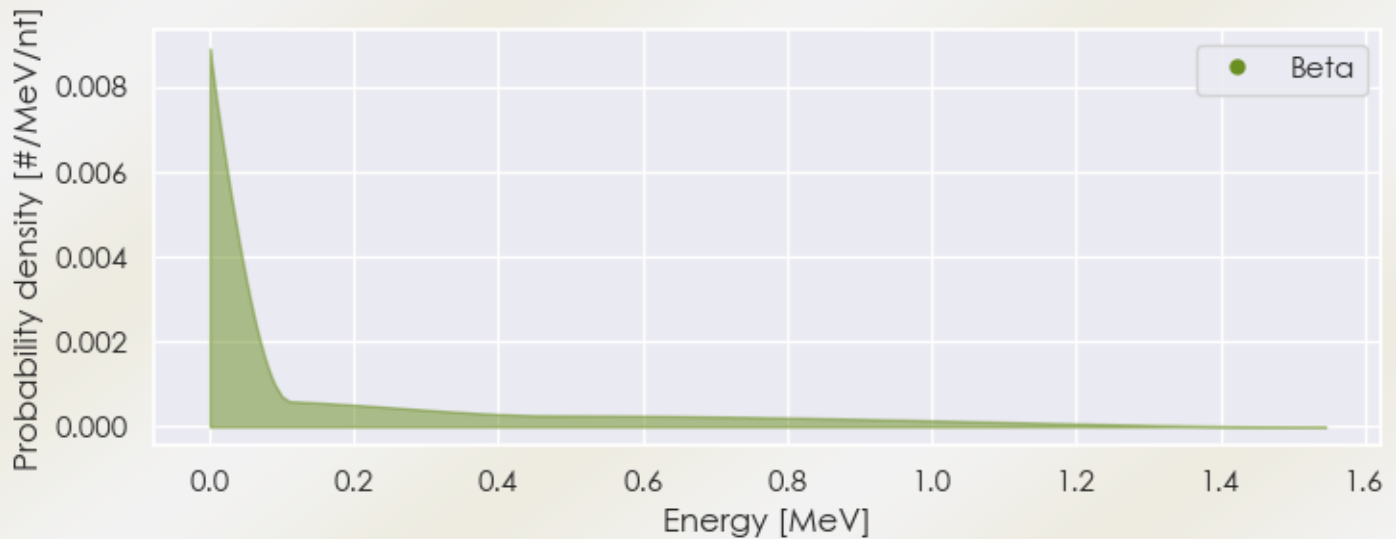
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pr-144m 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/Pr-144m Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pr-144m%20Beta%20Spectrum.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/Pr-144m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pr-144m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.55685e-05	1.060e+01	X-ray
5.01954e-03	5.001e-02	X-ray
5.48691e-03	1.748e-02	X-ray
3.55671e-02	8.514e-02	X-ray
3.60557e-02	1.555e-01	X-ray
4.06843e-02	1.524e-02	X-ray
4.07816e-02	2.950e-02	X-ray
1.29601e-05	1.246e+00	Auger electron
3.35200e-05	1.012e-02	Auger electron

7.07528e-05	1.296e+00	Auger electron
8.70969e-05	3.767e+00	Auger electron
1.40215e-04	6.079e-01	Auger electron
4.43473e-04	1.396e-01	Auger electron
6.68321e-04	1.350e+00	Auger electron
8.28106e-04	9.603e-02	Auger electron
3.97888e-03	5.080e-01	Auger electron
4.88280e-03	1.689e-01	Auger electron
5.82098e-03	1.383e-02	Auger electron
1.70200e-02	3.237e-01	Conversion electron
2.93378e-02	1.735e-02	Auger electron
5.22302e-02	1.913e-01	Conversion electron
5.25871e-02	2.850e-02	Conversion electron
5.30756e-02	2.911e-01	Conversion electron
5.78016e-02	1.286e-01	Conversion electron
5.90300e-02	3.523e-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