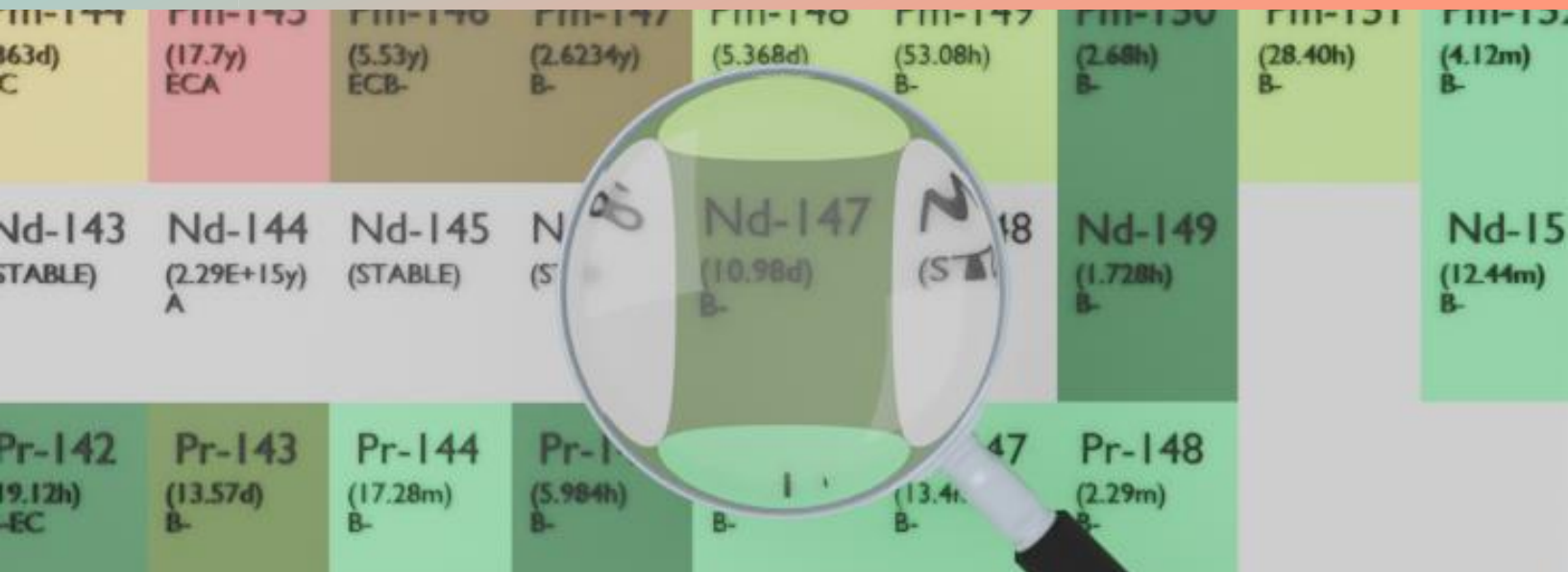




NEODYMIUM-147

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Nd-147
Atomic number (Z): 60
Mass number (A): 147
Neutron number (N): 87

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 10.98 [d]
Decay constant: 7.3065×10^{-7} [1/s]
Daughters: Pm-147 (100.0%)
Radioactive daughters: Pm-147

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.27015 [MeV]
Mean photon energy: 0.14078 [MeV]
Air kerma rate constant, Γ_{10} : 6.036×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.036×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.328×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

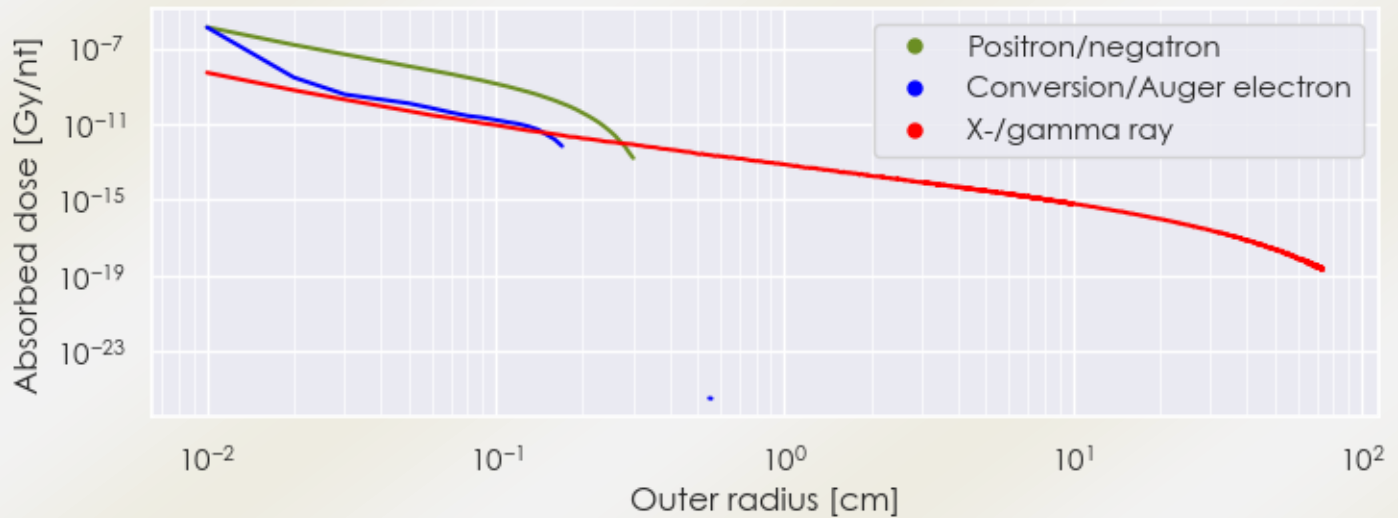
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 4.328e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.256e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

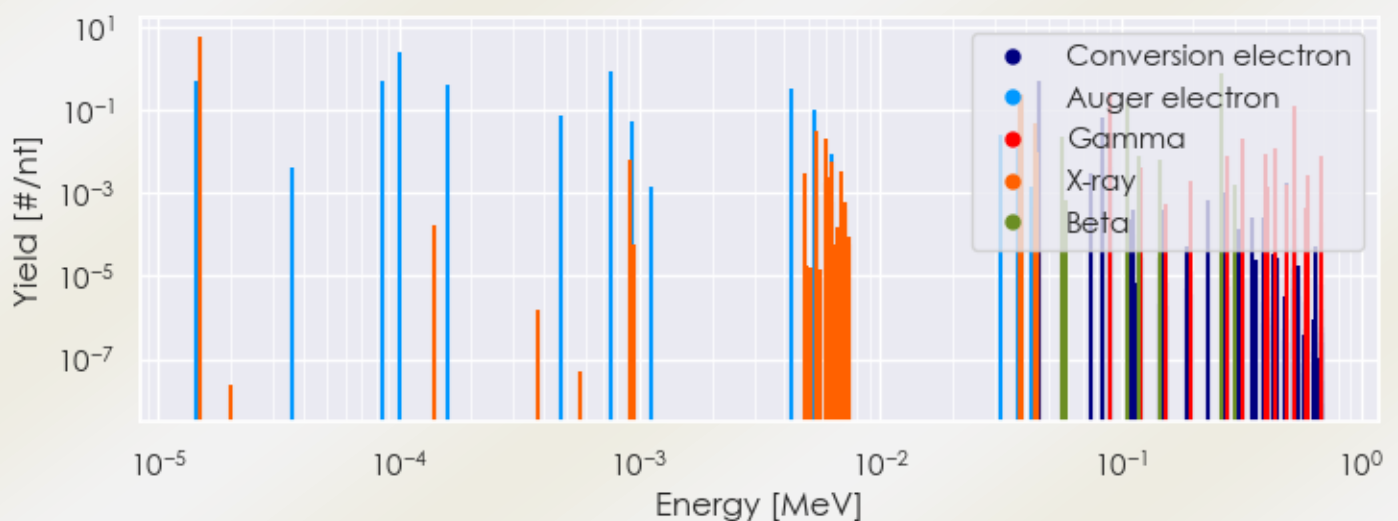
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Nd-147 DPK.csv

SUMMARY SPECTRA (PLOT)

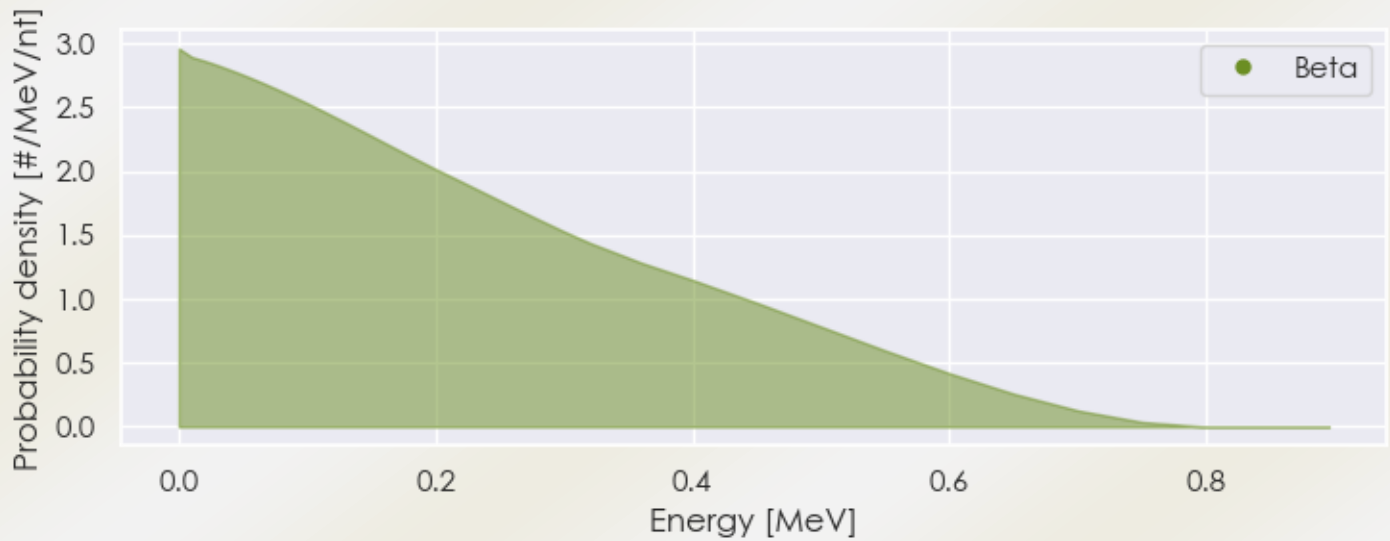
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Nd-147 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/Nd-147 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/Nd-147 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.48434e-05	5.992e+00	X-ray
5.41729e-03	3.247e-02	X-ray
5.95960e-03	2.048e-02	X-ray
3.81996e-02	1.326e-01	X-ray
3.87671e-02	2.406e-01	X-ray
4.37575e-02	2.395e-02	X-ray
4.38721e-02	4.634e-02	X-ray
4.49791e-02	1.004e-02	X-ray
9.11050e-02	2.790e-01	Gamma
3.19411e-01	1.953e-02	Gamma

4.39895e-01	1.200e-02	Gamma
5.31016e-01	1.309e-01	Gamma
5.74215e-02	2.197e-02	Beta
1.05864e-01	1.528e-01	Beta
2.63769e-01	8.091e-01	Beta
1.43706e-05	5.237e-01	Auger electron
8.52328e-05	4.884e-01	Auger electron
1.00573e-04	2.396e+00	Auger electron
1.59860e-04	3.847e-01	Auger electron
4.73040e-04	7.446e-02	Auger electron
7.55886e-04	8.360e-01	Auger electron
9.22488e-04	5.548e-02	Auger electron
4.29924e-03	3.146e-01	Auger electron
5.29891e-03	1.067e-01	Auger electron
3.14373e-02	2.413e-02	Auger electron
3.71303e-02	1.167e-02	Auger electron
4.58860e-02	4.918e-01	Conversion electron
8.37109e-02	6.324e-02	Conversion electron
8.97581e-02	1.546e-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