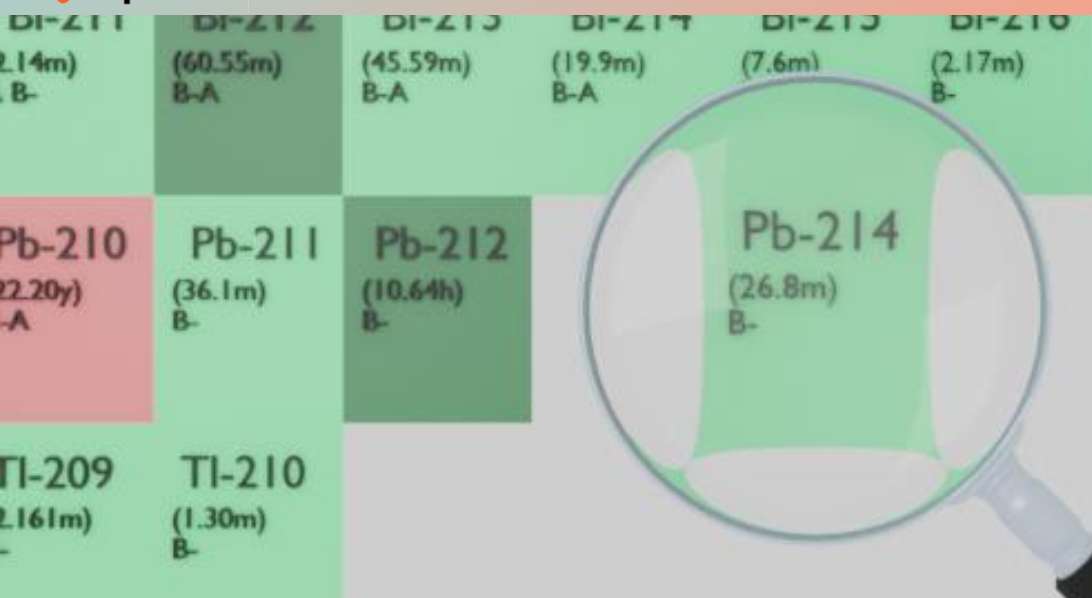




LEAD-214

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pb-214
Atomic number (Z): 82
Mass number (A): 214
Neutron number (N): 132

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 26.8 [m]
Decay constant: 4.3106×10^{-4} [1/s]
Daughters: Bi-214 (100.0%)
Radioactive daughters: Bi-214

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.29482 [MeV]
Mean photon energy: 0.25328 [MeV]
Air kerma rate constant, Γ_{10} : 1.477×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.477×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.724×10^{-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, $\Delta_{\beta,\beta^+,e^-}$: 4.724e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.058e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

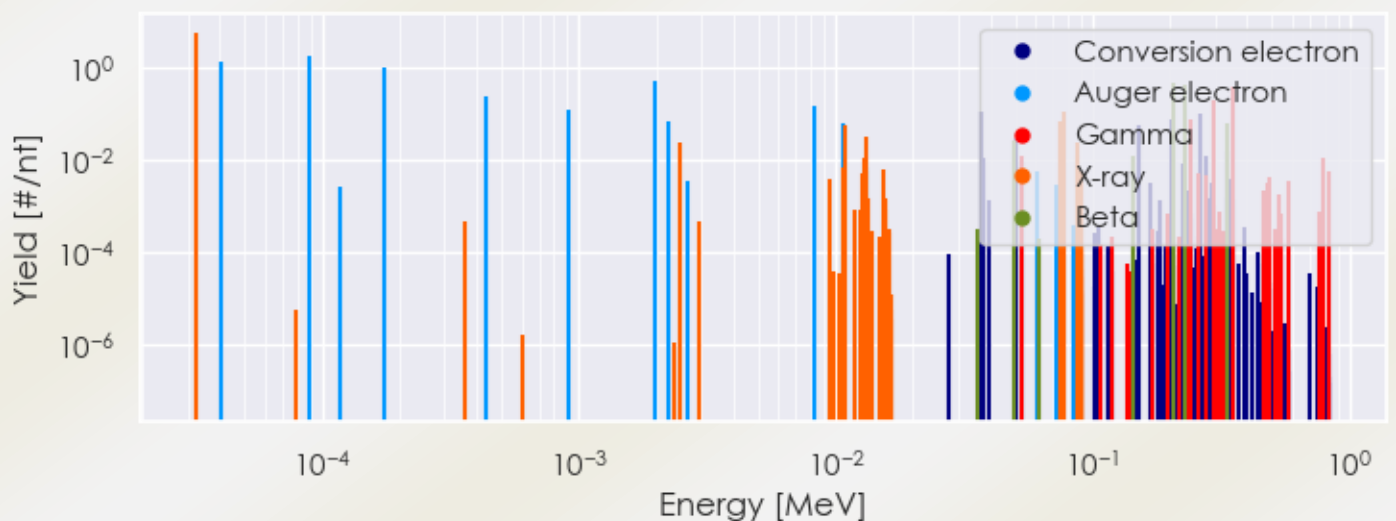
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pb-214 DPK.csv

SUMMARY SPECTRA (PLOT)

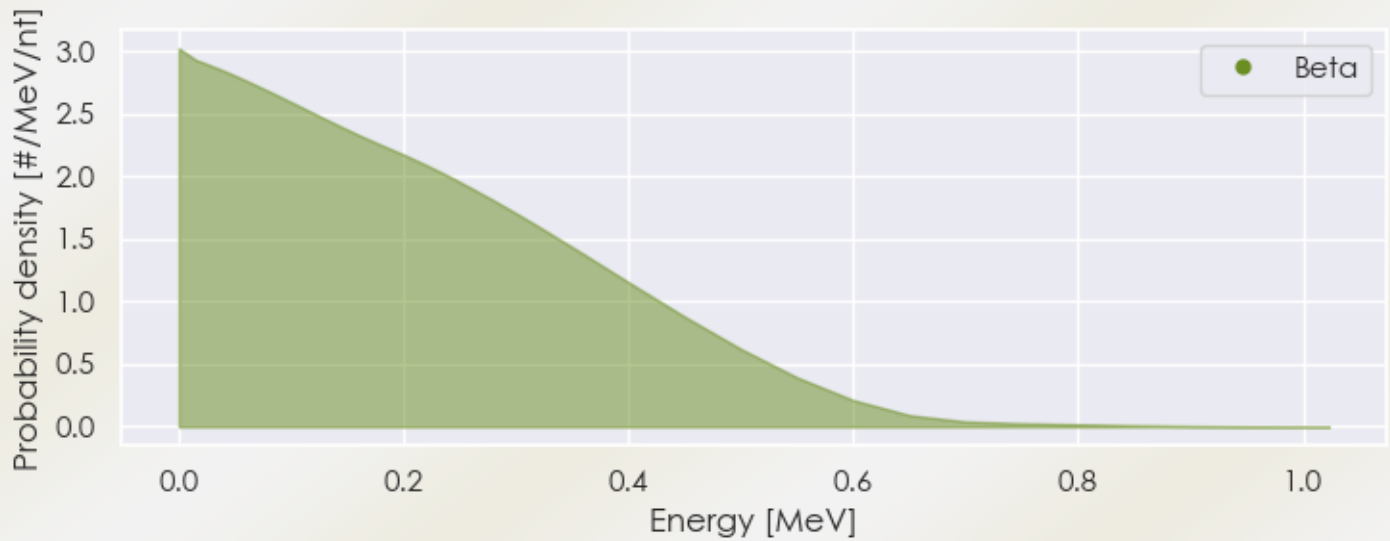
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pb-214 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/Pb-214 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/Pb-214 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.24777e-05	5.733e+00	X-ray
2.46014e-03	2.285e-02	X-ray
1.08390e-02	5.810e-02	X-ray
1.29844e-02	1.128e-02	X-ray
1.30700e-02	3.069e-02	X-ray
5.32275e-02	1.200e-02	Gamma
7.50642e-02	6.596e-02	X-ray
7.74071e-02	1.103e-01	X-ray
8.71393e-02	1.233e-02	X-ray
8.76651e-02	2.390e-02	X-ray

2.41997e-01	7.430e-02	Gamma
2.95224e-01	1.930e-01	Gamma
3.51932e-01	3.760e-01	Gamma
7.85960e-01	1.070e-02	Gamma
4.94487e-02	2.732e-02	Beta
1.44446e-01	1.164e-02	Beta
2.06812e-01	4.822e-01	Beta
2.26981e-01	4.162e-01	Beta
3.36347e-01	6.213e-02	Beta
4.07181e-05	1.338e+00	Auger electron
8.98390e-05	1.822e+00	Auger electron
1.73870e-04	9.675e-01	Auger electron
4.32837e-04	2.272e-01	Auger electron
9.09138e-04	1.214e-01	Auger electron
1.96059e-03	5.186e-01	Auger electron
2.23678e-03	6.801e-02	Auger electron
8.27506e-03	1.415e-01	Auger electron
1.07436e-02	6.366e-02	Auger electron
3.68515e-02	1.053e-01	Conversion electron
3.74595e-02	1.098e-02	Conversion electron
5.00606e-02	2.786e-02	Conversion electron
1.51165e-01	5.380e-02	Conversion electron
2.04392e-01	7.538e-02	Conversion electron
2.61100e-01	9.796e-02	Conversion electron
2.78848e-01	1.174e-02	Conversion electron
3.35556e-01	1.521e-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