



MERCURY-194

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Hg-194
Atomic number (Z): 80
Mass number (A): 194
Neutron number (N): 114

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 440.0 [y]
Decay constant: 4.9920×10^{-11} [1/s]
Daughters: Au-194 (100.0%)
Radioactive daughters: Au-194

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.00784 [MeV]
Mean photon energy: 0.00271 [MeV]
Air kerma rate constant, Γ_{10} : 4.638×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 4.638×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.256×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

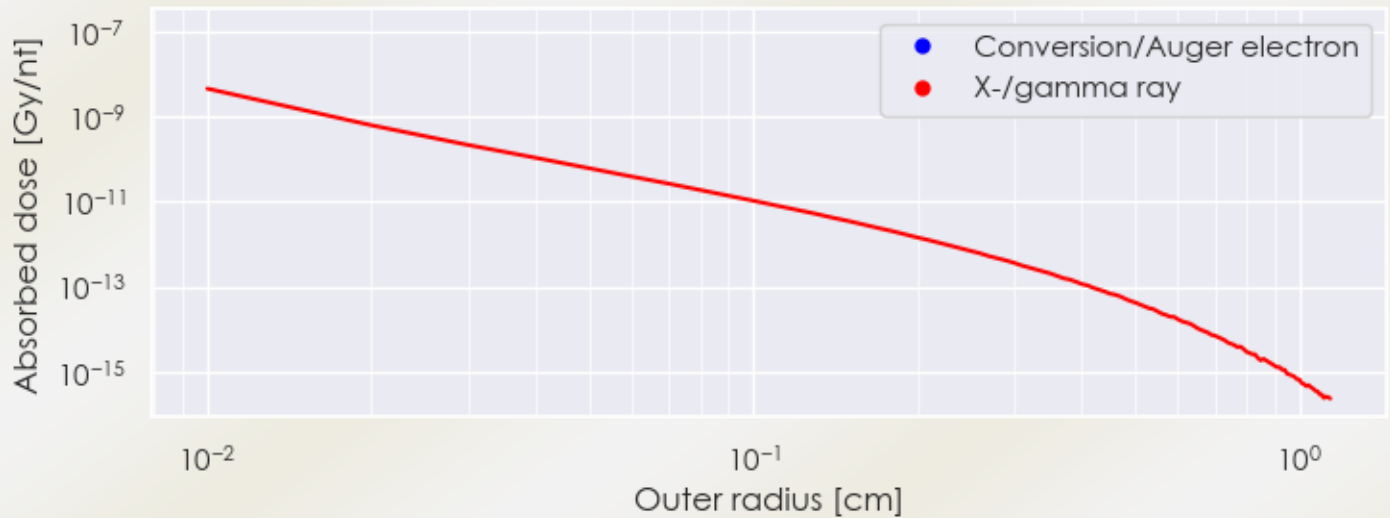
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.256×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.342×10^{-16} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

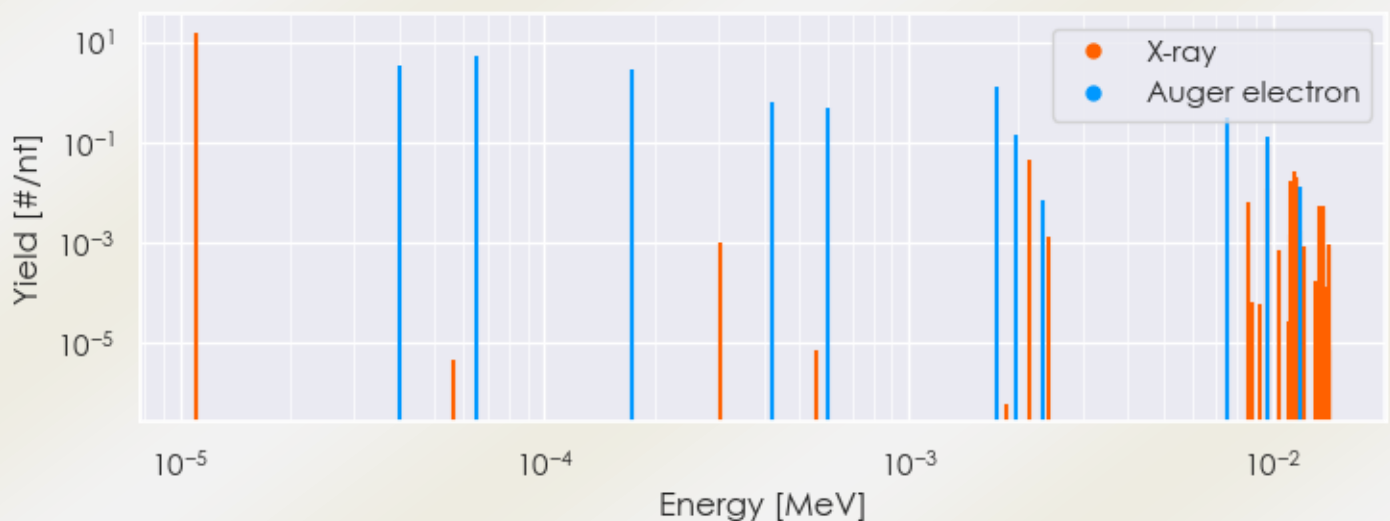
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Hg-194 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/Hg-194 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/Hg-194 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Hg-194%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
1.10999e-05	1.548e+01	X-ray
2.14846e-03	4.518e-02	X-ray
9.62125e-03	1.159e-02	X-ray
9.70980e-03	1.021e-01	X-ray
1.11917e-02	1.736e-02	X-ray
1.14753e-02	2.606e-02	X-ray
1.15869e-02	1.907e-02	X-ray
1.16020e-02	2.003e-02	X-ray
4.01741e-05	3.458e+00	Auger electron
6.54030e-05	5.187e+00	Auger electron
1.74892e-04	2.745e+00	Auger electron
4.24340e-04	6.372e-01	Auger electron
6.02561e-04	4.993e-01	Auger electron
1.75499e-03	1.322e+00	Auger electron
1.97854e-03	1.367e-01	Auger electron
7.51093e-03	3.071e-01	Auger electron
9.65644e-03	1.293e-01	Auger electron
1.18452e-02	1.325e-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