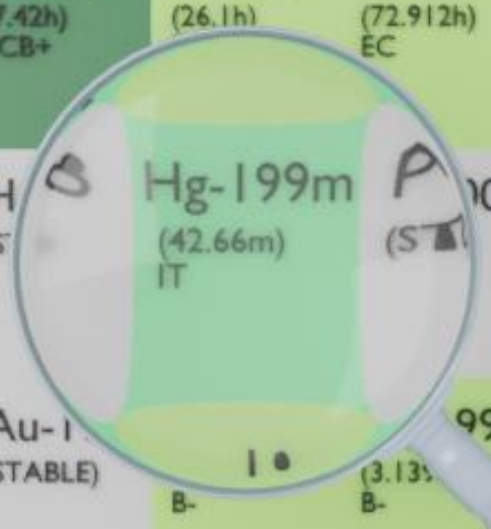




11-196 (1.84h) CB+	11-197 (2.84h) ECB+	11-198 (5.3h) ECB+	11-199 (7.42h) ECB+	11-200 (26.1h) IT	11-201 (72.912h) EC	11-202 (12.23d) EC	11-203 (STABLE)	11-204 (3.78y) B-EC
Hg-195 (10.53h) CB+	Hg-196 (STABLE)	Hg-197 (64.94h) EC	Hg-198 (STABLE)	Hg-199m (42.66m) IT	Hg-199 (STABLE)	Hg-201 (STABLE)	Hg-202 (STABLE)	Hg-203 (46.612d) B-
Au-194 (18.02h) CB+	Au-195 (186.098d) EC	Au-196 (6.183d) ECB-	Au-197 (STABLE)	Au-198 (B-)	Au-199 (3.13s) B-	Au-200 (48.4m) B-	Au-201 (26m) B-	Au-202 (28.8s) B-

MERCURY-199M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Hg-199m

Atomic number (Z): 80

Mass number (A): 199

Neutron number (N): 119

RADIOACTIVE DECAY

Decay modes: Internal transition

Half-life: 42.66 [m]

Decay constant: 2.7080×10^{-4} [1/s]

Daughters: Hg-199 (100.0%)

Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]

Mean electron energy: 0.3487 [MeV]

Mean photon energy: 0.18362 [MeV]

Air kerma rate constant, Γ_{10} : 1.401×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]

Air kerma coefficient, K_{air} : 1.401×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]

Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.587×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for alphas, Δ_{α} : $0.000 \times 10^{+00}$ [Gy $\cdot$ kg/Bq $\cdot$ s]

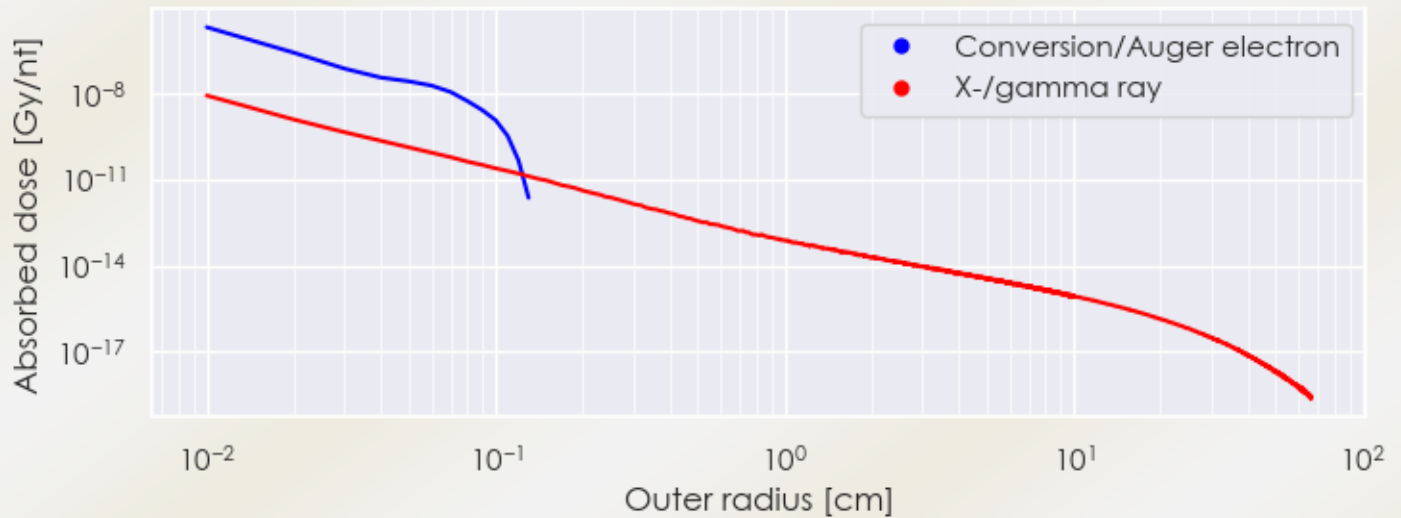
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.587×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.942×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

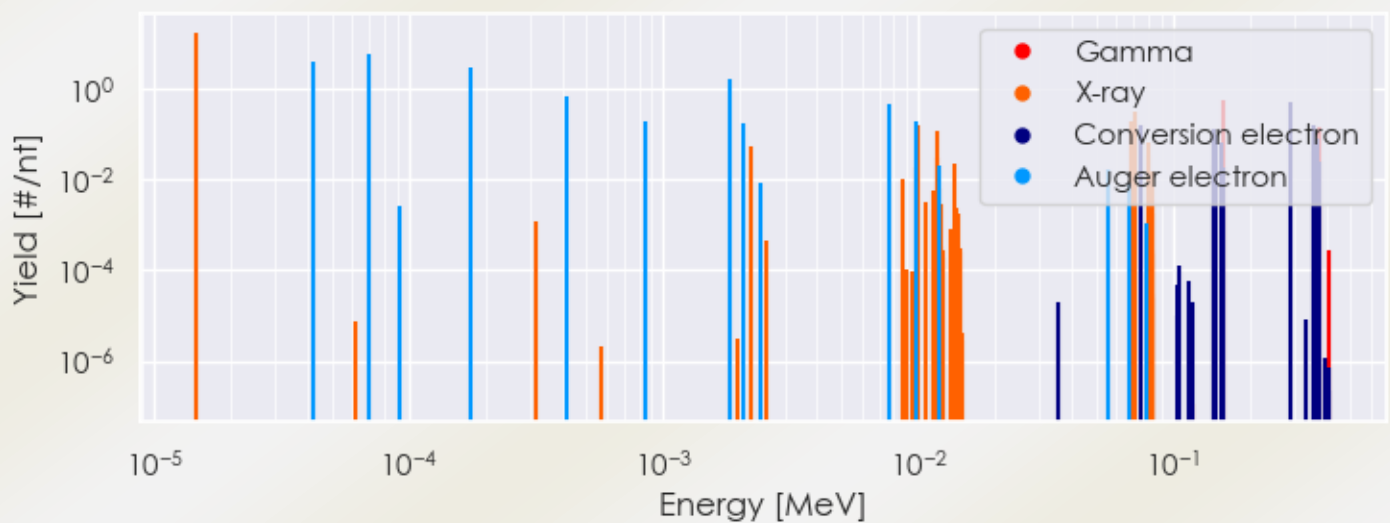
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Hg-199m 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-199m 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-199m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Hg-199m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
1.47048e-05	1.703e+01	X-ray
2.22393e-03	5.546e-02	X-ray
8.75019e-03	1.006e-02	X-ray
9.89221e-03	1.755e-02	X-ray
9.98620e-03	1.546e-01	X-ray
1.18592e-02	1.132e-01	X-ray
1.19286e-02	2.917e-02	X-ray
1.38758e-02	2.260e-02	X-ray
6.90989e-02	1.801e-01	X-ray
7.10661e-02	3.052e-01	X-ray
8.00792e-02	3.371e-02	X-ray
8.05161e-02	6.525e-02	X-ray
8.27860e-02	1.556e-02	X-ray
1.58300e-01	5.230e-01	Gamma
3.74100e-01	1.375e-01	Gamma
4.20497e-05	3.859e+00	Auger electron
6.99800e-05	5.638e+00	Auger electron
1.74808e-04	2.972e+00	Auger electron
4.17996e-04	6.348e-01	Auger electron
8.51456e-04	1.917e-01	Auger electron
1.80980e-03	1.523e+00	Auger electron
2.04363e-03	1.686e-01	Auger electron
7.68879e-03	4.515e-01	Auger electron
9.89971e-03	1.932e-01	Auger electron
1.21392e-02	1.995e-02	Auger electron
5.57212e-02	1.599e-02	Auger electron
7.49470e-02	1.527e-01	Conversion electron

1.43474e-01	1.994e-02	Conversion electron
1.44046e-01	1.321e-01	Conversion electron
1.46013e-01	9.097e-02	Conversion electron
1.55463e-01	6.342e-02	Conversion electron
1.58300e-01	1.900e-02	Conversion electron
2.90747e-01	4.888e-01	Conversion electron
3.59274e-01	1.520e-01	Conversion electron
3.59846e-01	4.135e-02	Conversion electron
3.61813e-01	8.109e-02	Conversion electron
3.71263e-01	7.466e-02	Conversion electron
3.74100e-01	2.332e-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