



The image shows a portion of a periodic table of radionuclides. A magnifying glass is positioned over the entry for Ho-157. The table includes isotopes of Erbium (Er), Holmium (Ho), and Dysprosium (Dy). Each entry typically shows the element symbol, mass number, half-life, and decay mode.

Er-154	Er-156	Er-157	Er-160	Er-162
(3.73m) ECB+A	(19.5m) EC	(36m) ECB+	(3.21h) ECB+	(STABLE)
Ho-153	Ho-154	Ho-155	Ho-157	Ho-159
(2.01m) ECB+A	(11.76m) ECB+A	(48m) ECB+	(12.6m) ECB+	(33.05m) ECB+
Dy-152	Dy-153	Dy-154	Dy-157	Dy-158
(2.38h) CA	(6.4h) ECB+A	(3.0E+6y) A	(8.14h) EC	(STABLE)

HOLMIUM-157

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ho-157
Atomic number (Z): 67
Mass number (A): 157
Neutron number (N): 90

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 12.6 [m]
Decay constant: $9.1686\text{e-}04$ [1/s]
Daughters: Dy-157 (100.0%)
Radioactive daughters: Dy-157

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.09288 [MeV]
Mean photon energy: 0.58349 [MeV]
Air kerma rate constant, Γ_{10} : $2.077\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $2.289\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.488\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

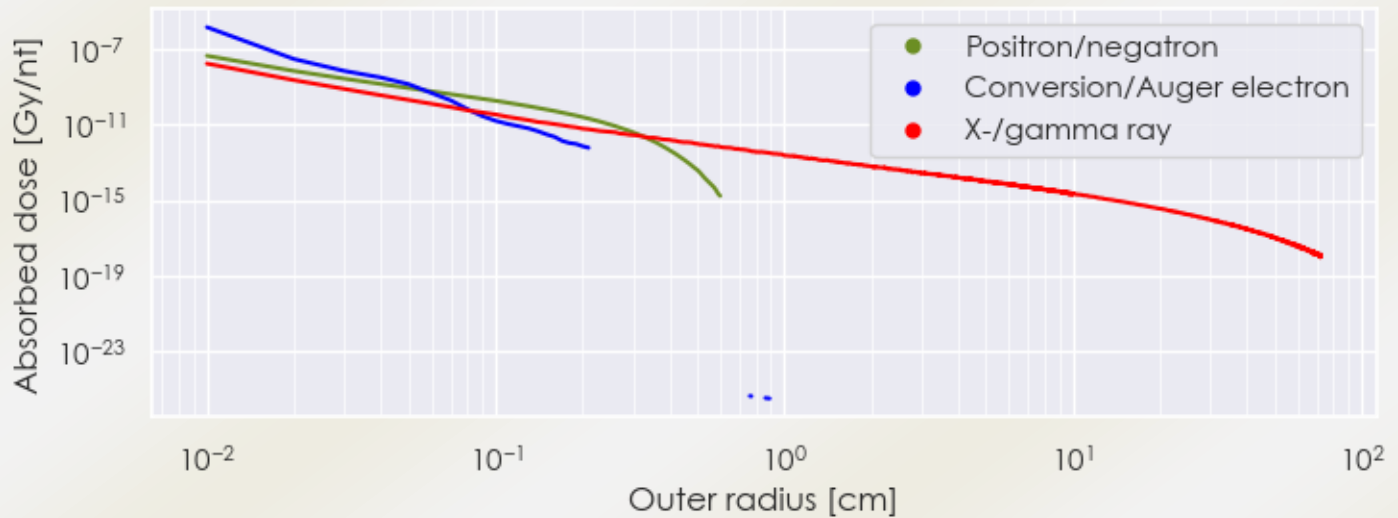
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.488×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 9.349×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

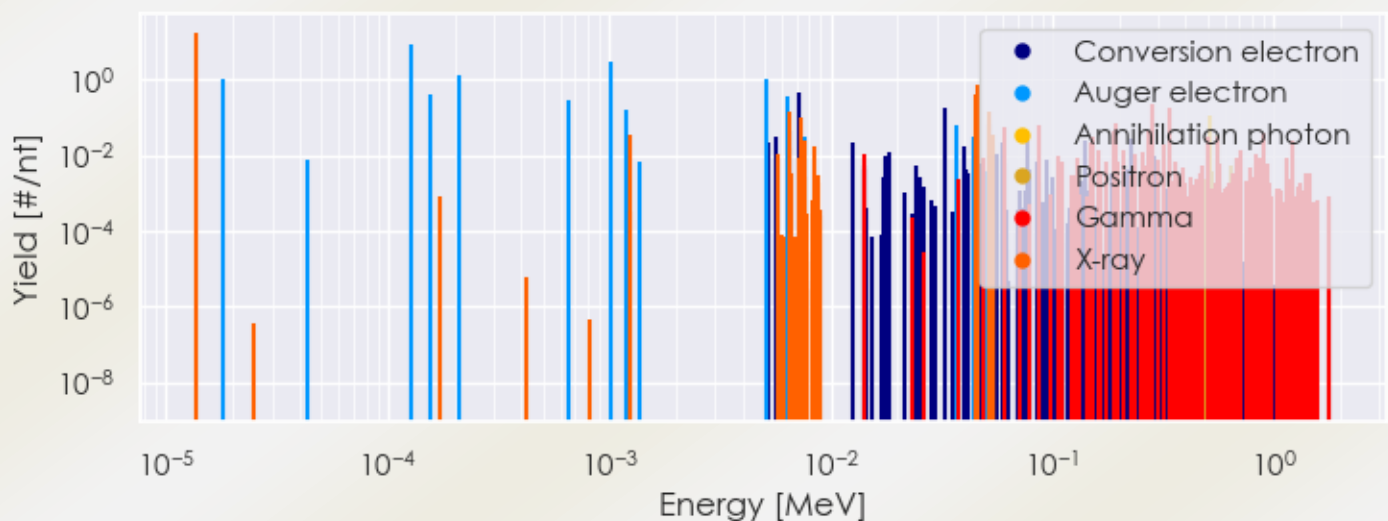
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ho-157 DPK.csv

SUMMARY SPECTRA (PLOT)

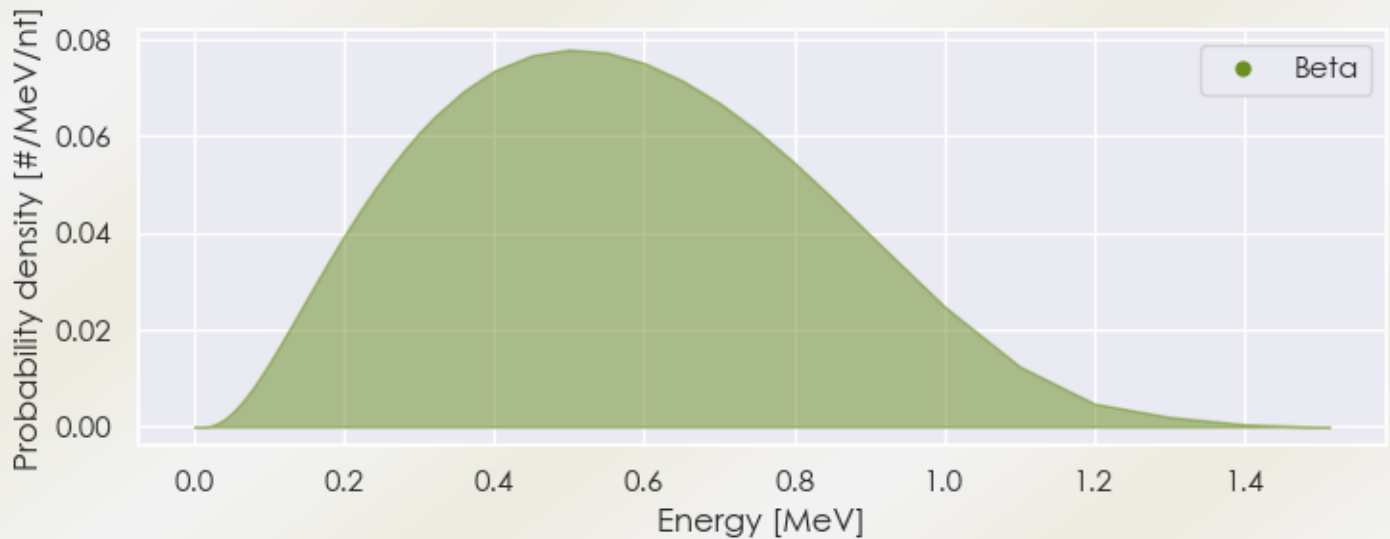
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ho-157 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/Ho-157 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/Ho-157 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.37119e-05	1.756e+01	X-ray
1.22940e-03	3.350e-02	X-ray
5.76280e-03	1.089e-02	X-ray
6.44440e-03	1.592e-02	X-ray
6.48150e-03	1.407e-01	X-ray
7.25411e-03	9.569e-02	X-ray
7.35039e-03	1.125e-02	X-ray
7.62077e-03	2.382e-02	X-ray
8.42363e-03	1.679e-02	X-ray
1.42300e-02	1.067e-02	Gamma

4.52703e-02	4.134e-01	X-ray
4.60801e-02	7.388e-01	X-ray
5.20302e-02	7.604e-02	X-ray
5.21989e-02	1.470e-01	X-ray
5.35316e-02	1.674e-02	X-ray
5.35696e-02	3.242e-02	X-ray
6.11100e-02	5.334e-02	Gamma
8.65500e-02	5.811e-02	Gamma
1.47730e-01	2.043e-02	Gamma
1.53090e-01	3.064e-02	Gamma
1.62350e-01	1.407e-02	Gamma
1.88050e-01	4.177e-02	Gamma
1.93410e-01	7.264e-02	Gamma
2.08700e-01	1.271e-02	Gamma
2.34610e-01	1.022e-02	Gamma
2.57880e-01	1.135e-02	Gamma
2.72170e-01	4.290e-02	Gamma
2.79970e-01	2.270e-01	Gamma
3.20200e-01	1.816e-02	Gamma
3.41160e-01	1.748e-01	Gamma
5.08300e-01	2.996e-02	Gamma
5.11000e-01	1.092e-01	Annihilation photon
5.55500e-01	2.951e-02	Gamma
7.08600e-01	1.362e-02	Gamma
8.35300e-01	1.067e-02	Gamma
8.96600e-01	3.995e-02	Gamma
1.21110e+00	2.338e-02	Gamma
5.61963e-01	3.337e-02	Positron
1.81686e-05	9.731e-01	Auger electron
1.28553e-04	8.014e+00	Auger electron
1.55434e-04	3.944e-01	Auger electron
2.09777e-04	1.293e+00	Auger electron
6.59885e-04	2.656e-01	Auger electron
1.01704e-03	2.786e+00	Auger electron
1.19293e-03	1.515e-01	Auger electron
5.12623e-03	9.952e-01	Auger electron
5.21750e-03	2.227e-02	Conversion electron
5.63930e-03	2.891e-02	Conversion electron

6.38937e-03	3.503e-01	Auger electron
6.44900e-03	4.578e-02	Conversion electron
7.24901e-03	4.490e-01	Conversion electron
7.68657e-03	3.104e-02	Auger electron
1.25679e-02	2.235e-02	Conversion electron
1.82890e-02	1.260e-02	Conversion electron
3.26890e-02	1.800e-01	Conversion electron
3.70640e-02	5.881e-02	Auger electron
4.01375e-02	1.776e-02	Conversion electron
4.39727e-02	2.942e-02	Auger electron
5.20975e-02	6.046e-02	Conversion electron
5.25193e-02	1.713e-02	Conversion electron
5.33290e-02	1.434e-02	Conversion electron
5.59990e-02	1.007e-02	Conversion electron
5.94479e-02	2.074e-02	Conversion electron
7.75375e-02	2.403e-02	Conversion electron
1.39549e-01	2.351e-02	Conversion electron
2.26109e-01	2.684e-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