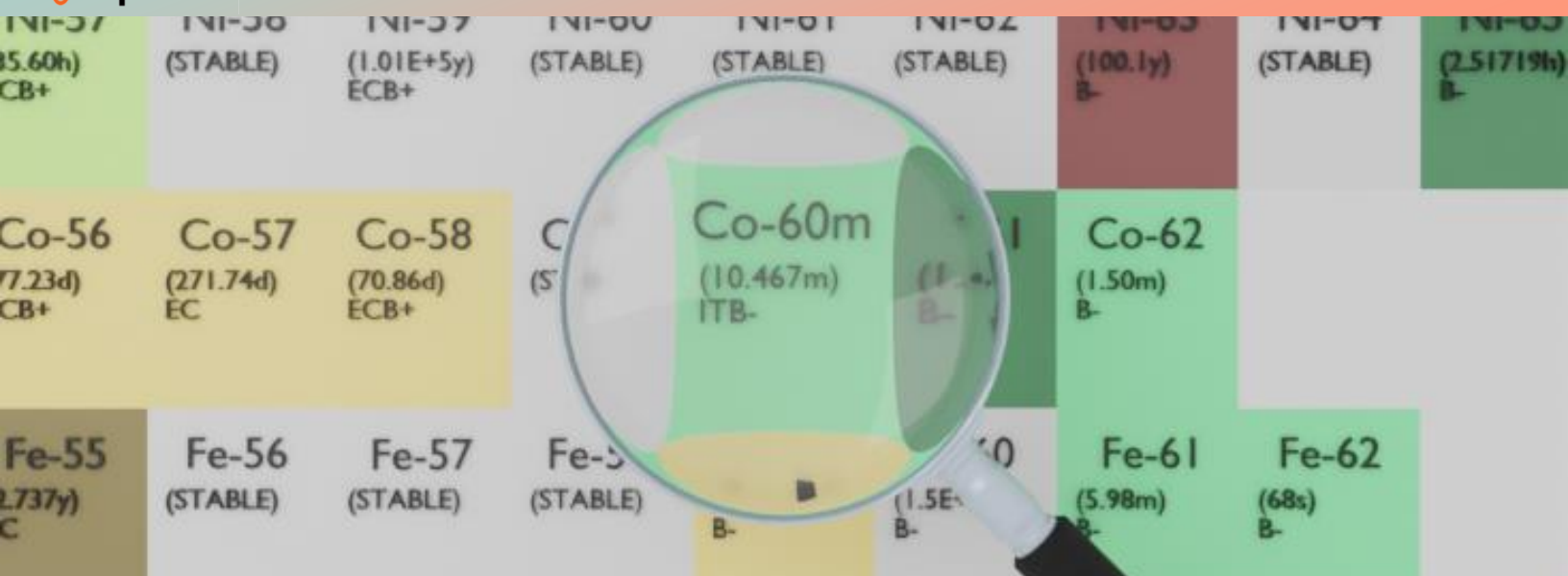




COBALT-60M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Co-60m
Atomic number (Z): 27
Mass number (A): 60
Neutron number (N): 33

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 10.47 [m]
Decay constant: 1.1037×10^{-3} [1/s]
Daughters: Co-60 (99.8%), Ni-60 (0.24%)
Radioactive daughters: Co-60

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.05647 [MeV]
Mean photon energy: 0.00668 [MeV]
Air kerma rate constant, Γ_{10} : 1.583×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.583×10^{-19} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 9.048×10^{-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, $\Delta_{\beta-, \beta+, e-}$: 9.048×10^{-15} [Gy · kg/Bq · s]

Equilibrium dose constant for photons, Δ_p : 1.070×10^{-15} [Gy · kg/Bq · s]

DOSE POINT KERNELS (PLOT)

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

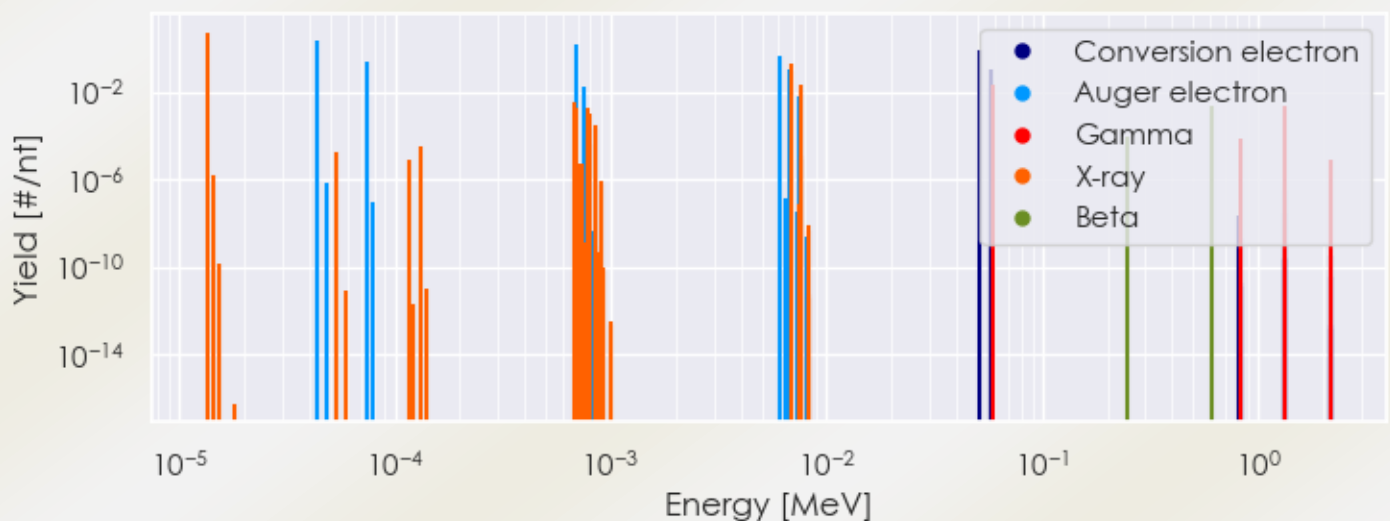
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Co-60m DPK.csv

SUMMARY SPECTRA (PLOT)

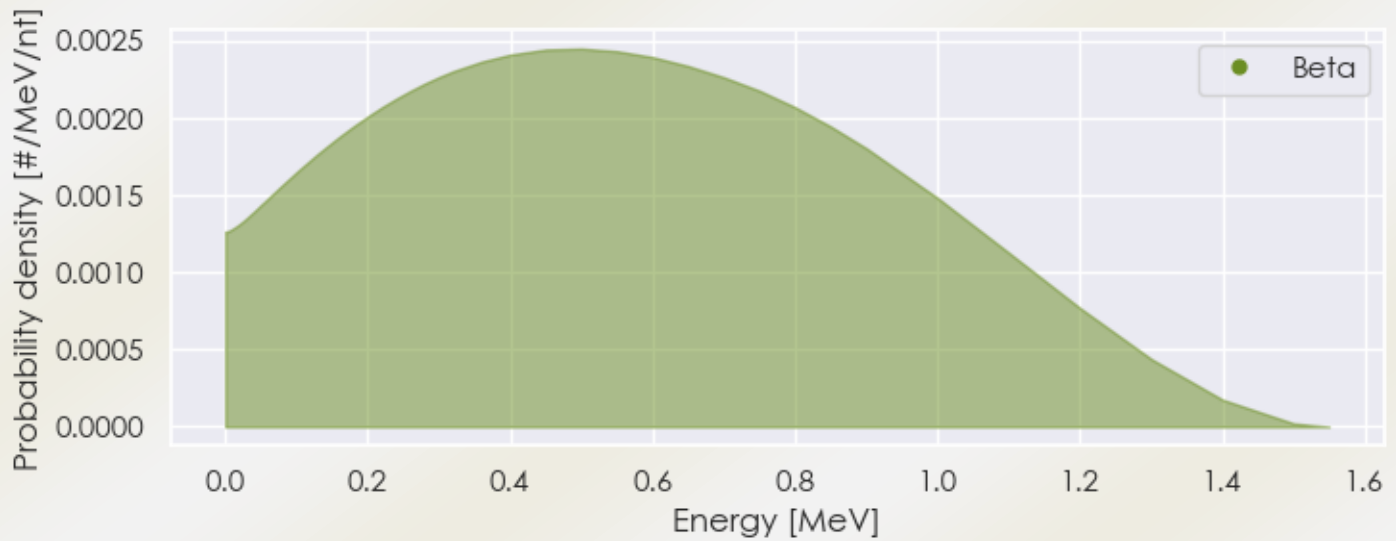
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Co-60m 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/Co-60m 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/Co-60m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.35401e-05	5.224e+00	X-ray
6.87316e-03	9.221e-02	X-ray
6.88840e-03	1.803e-01	X-ray
7.60650e-03	1.119e-02	X-ray
7.60846e-03	2.198e-02	X-ray
5.86030e-02	2.058e-02	Gamma
4.39205e-05	2.129e+00	Auger electron
7.49251e-05	2.524e-01	Auger electron
6.98200e-04	1.327e+00	Auger electron

7.44749e-04	1.548e-02	Auger electron
6.03079e-03	4.143e-01	Auger electron
6.77509e-03	1.025e-01	Auger electron
5.09223e-02	8.291e-01	Conversion electron
5.76801e-02	1.009e-01	Conversion electron
5.77955e-02	1.420e-02	Conversion electron
5.78107e-02	3.276e-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