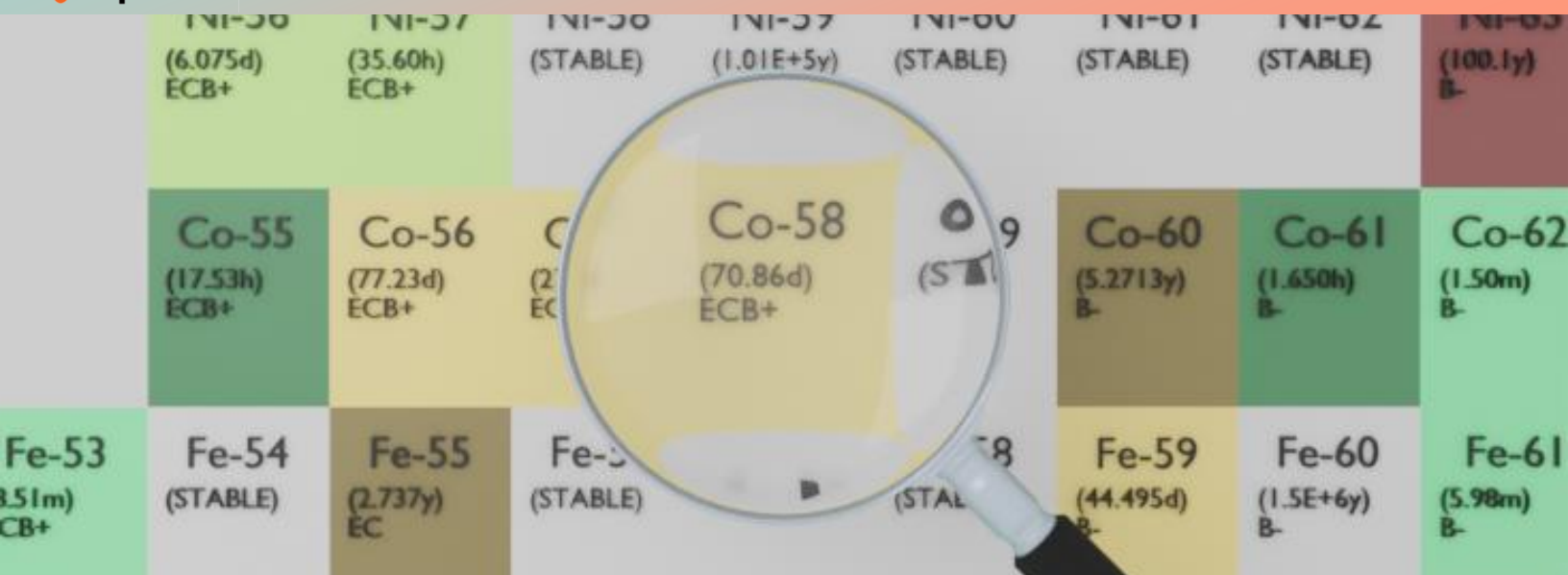




The image shows a portion of a periodic table of radionuclides. A magnifying glass is positioned over the Co-58 entry, which is highlighted in yellow. The table includes various isotopes of Ni, Co, and Fe, each with its half-life and decay mode listed.

Ni-56	Ni-57	Ni-58	Ni-59	Ni-60	Ni-61	Ni-62	Ni-63
(6.075d) ECB+	(35.60h) ECB+	(STABLE)	(1.01E+5y)	(STABLE)	(STABLE)	(STABLE)	(100.1y) B-
Co-55	Co-56	Co-57	Co-58	Co-59	Co-60	Co-61	Co-62
(17.53h) ECB+	(77.23d) ECB+	(2.1E+5y) ECB+	(70.86d) ECB+	(STABLE)	(5.2713y) B-	(1.650h) B-	(1.50m) B-
Fe-53	Fe-54	Fe-55	Fe-56	Fe-57	Fe-58	Fe-59	Fe-60
(8.51m) CB+	(STABLE)	(2.737y) EC	(STABLE)	(STABLE)	(STABLE)	(44.495d) B-	(1.5E+6y) B-
Fe-61	Fe-62	Fe-63	Fe-64	Fe-65	Fe-66	Fe-67	Fe-68
(5.98m) B-	(STABLE)	(STABLE)	(STABLE)	(STABLE)	(STABLE)	(STABLE)	(STABLE)

COBALT-58

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Co-58
Atomic number (Z): 27
Mass number (A): 58
Neutron number (N): 31

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 70.86 [d]
Decay constant: 1.1322×10^{-7} [1/s]
Daughters: Fe-58 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.03395 [MeV]
Mean photon energy: 0.97493 [MeV]
Air kerma rate constant, Γ_{10} : 3.015×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.591×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.439×10^{-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, $\Delta_{\beta,\beta^+,e^-}$: 5.439e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.562e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

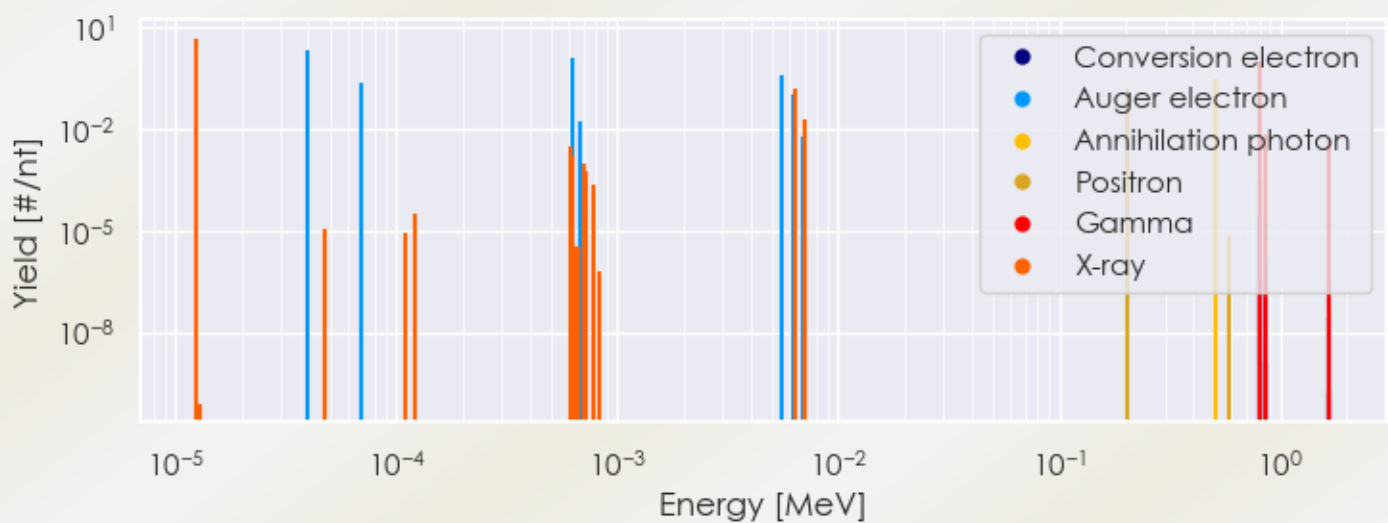
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Co-58 DPK.csv

SUMMARY SPECTRA (PLOT)

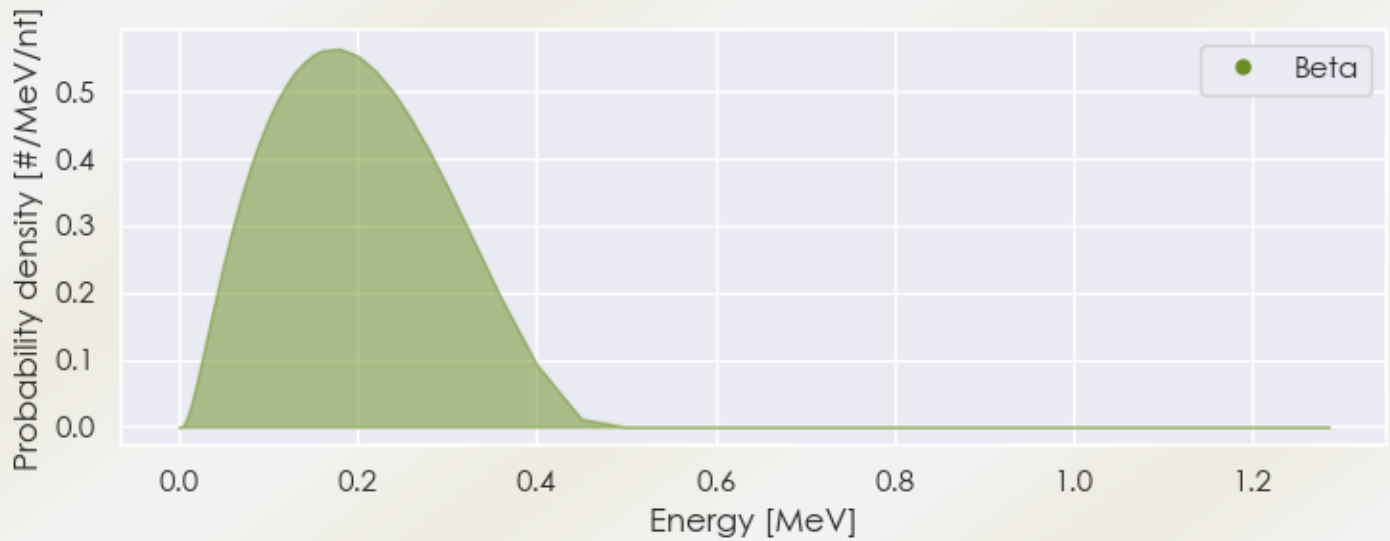
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Co-58 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-58 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-58 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.25308e-05	4.879e+00	X-ray
6.34985e-03	7.664e-02	X-ray
6.36272e-03	1.501e-01	X-ray
7.01694e-03	1.814e-02	X-ray
5.11000e-01	2.980e-01	Annihilation photon
8.10759e-01	9.945e-01	Gamma
2.01073e-01	1.490e-01	Positron
4.00278e-05	2.099e+00	Auger electron
6.97184e-05	2.308e-01	Auger electron
6.26751e-04	1.180e+00	Auger electron

6.73993e-04	1.594e-02	Auger electron
5.58186e-03	3.982e-01	Auger electron
6.25798e-03	9.743e-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