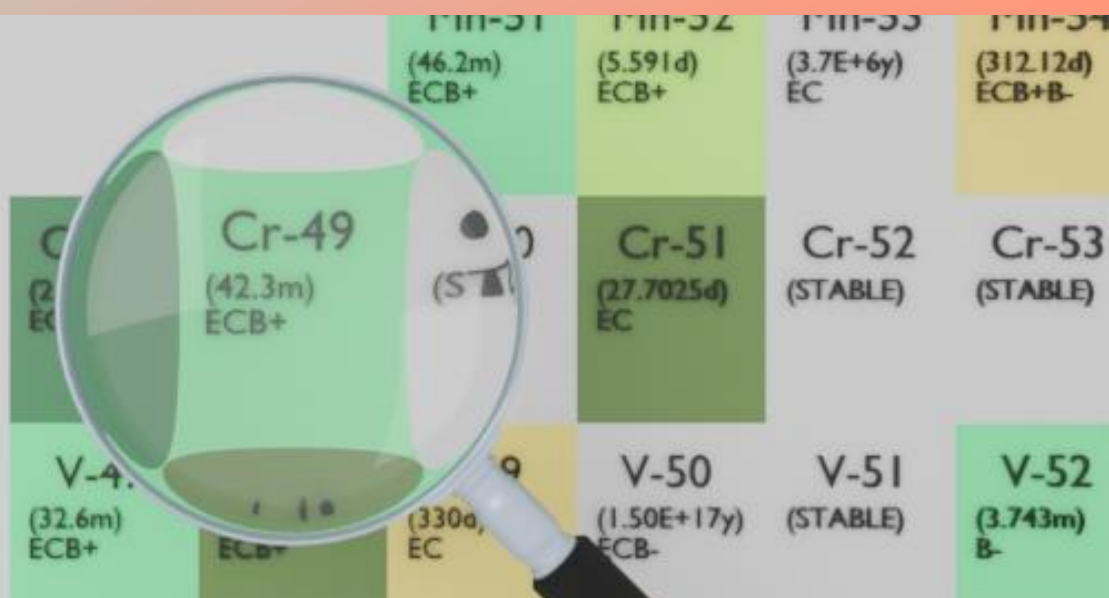




	Cr-49 (42.3m) ECB+	Cr-51 (27.7025d) EC	Cr-52 (STABLE)	Cr-53 (STABLE)
V-49 (32.6m) ECB+		V-50 (1.50E+17y) ECB-	V-51 (STABLE)	V-52 (3.743m) B-

CHROMIUM-49

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cr-49
Atomic number (Z): 24
Mass number (A): 49
Neutron number (N): 25

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 42.3 [m]
Decay constant: 2.7311×10^{-4} [1/s]
Daughters: V-49 (100.0%)
Radioactive daughters: V-49

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.60465 [MeV]
Mean photon energy: 1.05379 [MeV]
Air kerma rate constant, Γ_{10} : 3.346×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.922×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 9.688×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

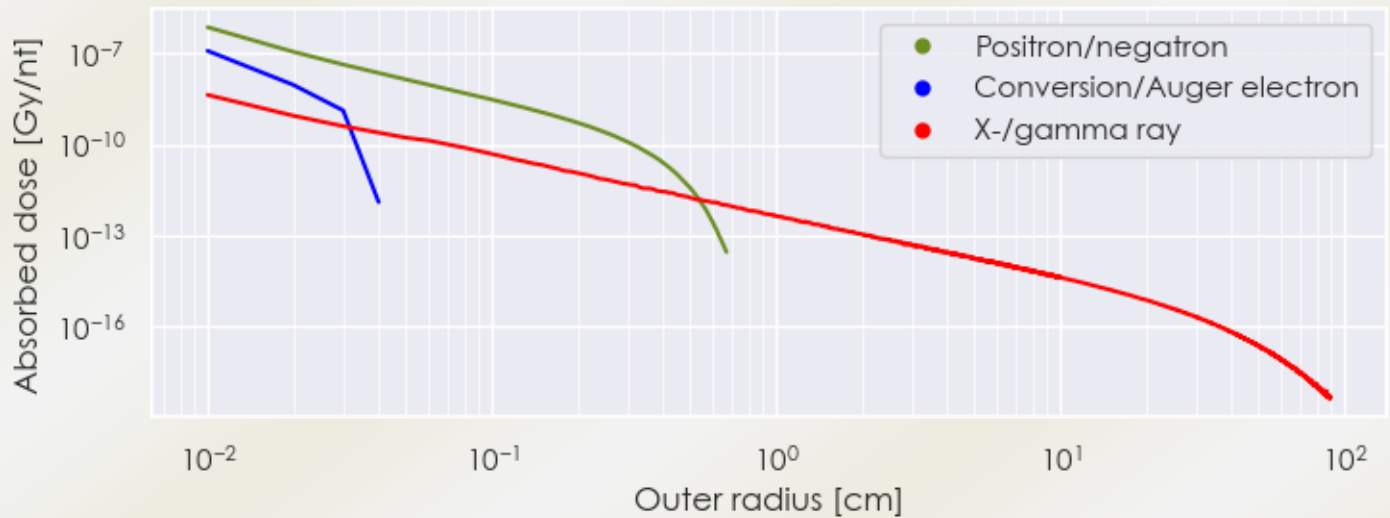
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 9.688e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.688e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

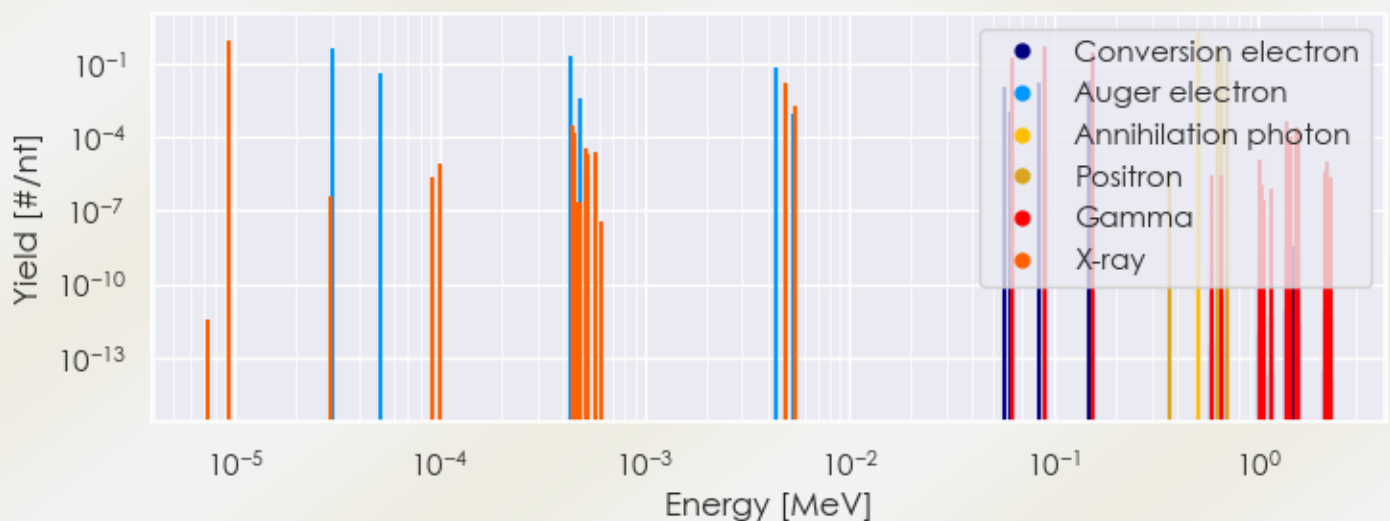
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cr-49 DPK.csv

SUMMARY SPECTRA (PLOT)

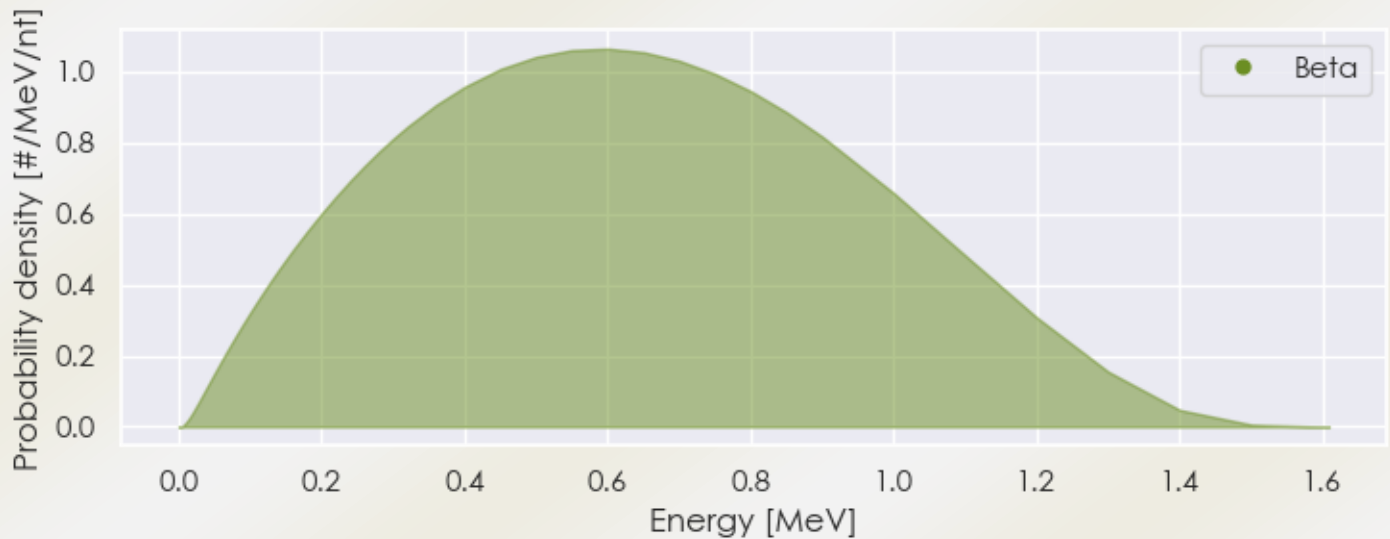
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cr-49 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/Cr-49 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/Cr-49 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
9.23903e-06	8.685e-01	X-ray
4.91506e-03	1.639e-02	X-ray
6.22890e-02	1.639e-01	Gamma
9.06390e-02	5.320e-01	Gamma
1.52928e-01	3.032e-01	Gamma
5.11000e-01	1.854e+00	Annihilation photon
6.26557e-01	4.631e-01	Positron
6.54796e-01	3.468e-01	Positron
6.96056e-01	1.168e-01	Positron
2.99867e-05	4.275e-01	Auger electron

5.14571e-05	3.848e-02	Auger electron
4.35376e-04	1.861e-01	Auger electron
4.34375e-03	6.899e-02	Auger electron
4.83456e-03	1.624e-02	Auger electron
5.68494e-02	1.174e-02	Conversion electron
8.51994e-02	1.681e-02	Conversion electron
1.47488e-01	2.001e-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