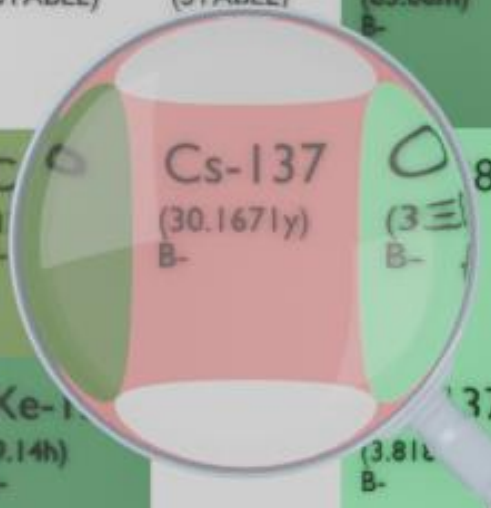




Da-134 (STABLE)	Da-135 (STABLE)	Da-136 (STABLE)	Da-137 (STABLE)	Da-138 (STABLE)	Da-139 (83.06m) B-	Da-140 (12.752d) B-	Da-141 (18.27m) B-	Da-142 (10.6m) B-
Cs-133 (STABLE)	Cs-134 (2.0648y) B-EC	Cs-135 (2.3E+6y) B-	Cs-136 (13.06d) B-	Cs-137 (30.1671y) B-	Cs-138 (3.15m) B-	Cs-139 (9.27m) B-	Cs-140 (63.7s) B-	
Xe-132 (STABLE)	Xe-133 (5.243d) B-	Xe-134 (STABLE)	Xe-135 (9.14h) B-	Xe-136 (3.81E+10y) B-	Xe-137 (3.81E+10y) B-	Xe-138 (14.08m) B-		

CESIUM-137

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-137
Atomic number (Z): 55
Mass number (A): 137
Neutron number (N): 82

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 30.17 [y]
Decay constant: 7.2811×10^{-10} [1/s]
Daughters: Ba-137m (94.4%), Ba-137 (5.6%)
Radioactive daughters: Ba-137m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.18836 [MeV]
Mean photon energy: 0.0 [MeV]
Air kerma rate constant, Γ_{10} : 6.108×10^{-23} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.108×10^{-23} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 3.018×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

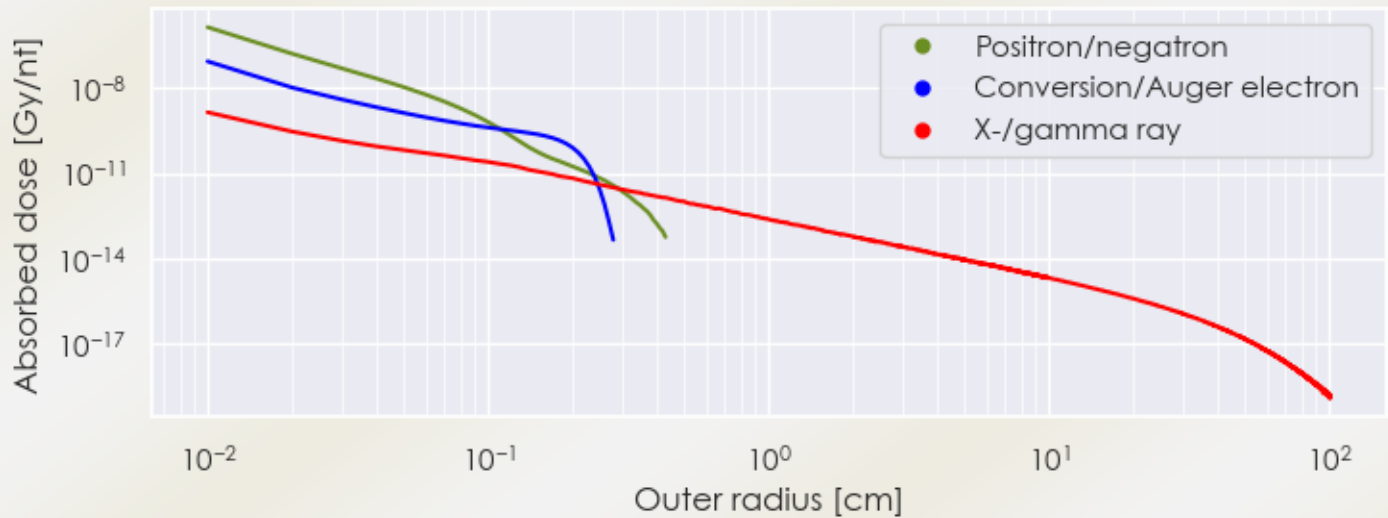
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 3.018e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 0.000e+00 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

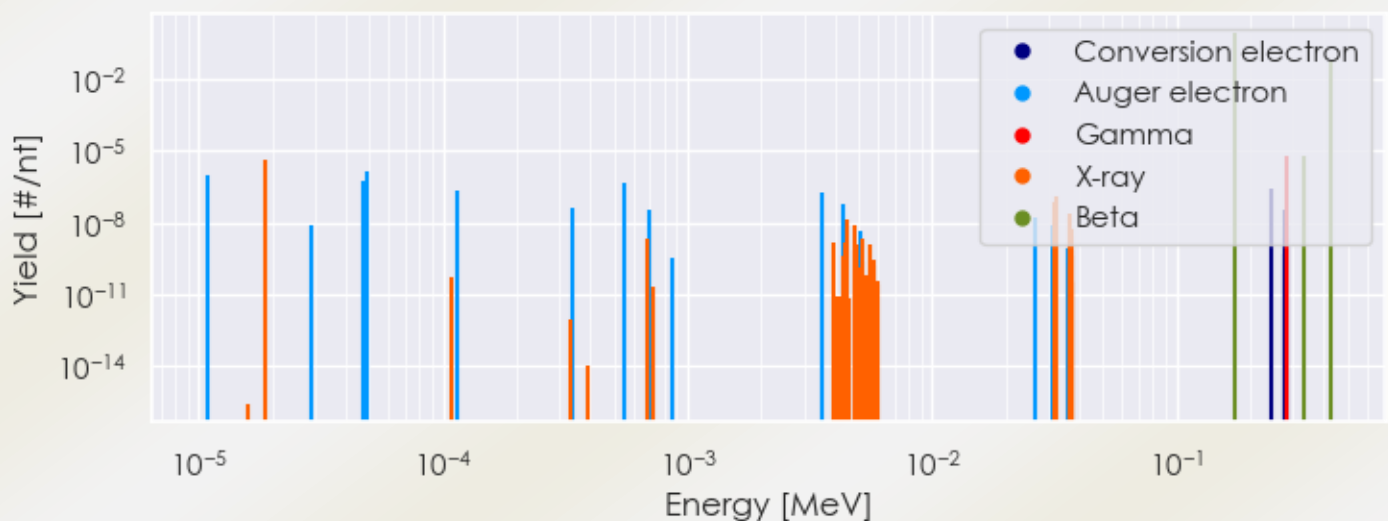
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cs-137 DPK.csv

SUMMARY SPECTRA (PLOT)

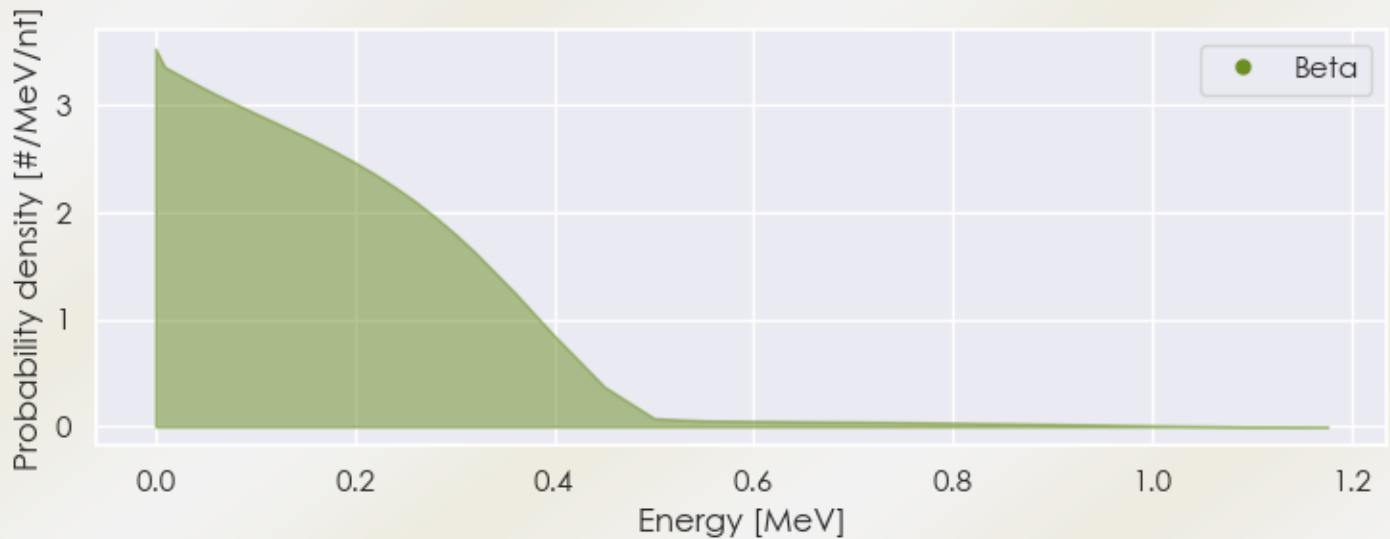
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cs-137 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/Cs-137 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/Cs-137 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.74293e-01	9.440e-01	Beta
4.25616e-01	5.600e-02	Beta

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