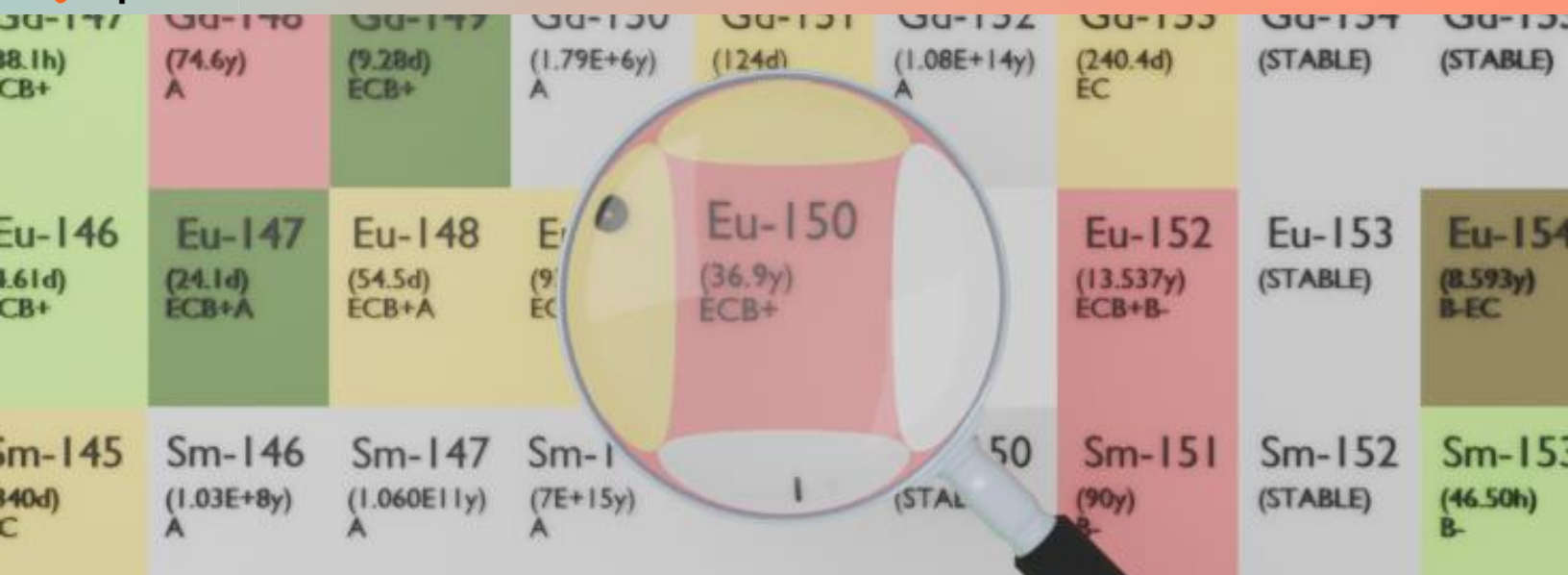




The image shows a portion of a periodic table of radionuclides. A magnifying glass is positioned over the cell for Eu-150. The table includes isotopes of Gadolinium (Gd), Europium (Eu), and Samarium (Sm). Each cell contains the isotope name, half-life, and decay mode. The magnifying glass highlights the following information for Eu-150:

Isotope	Half-life	Decay Mode
Eu-150	(36.9y)	ECB+

EUROPIUM-150

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Eu-150
Atomic number (Z): 63
Mass number (A): 150
Neutron number (N): 87

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 36.9 [y]
Decay constant: 5.9526×10^{-10} [1/s]
Daughters: Sm-150 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.02847 [MeV]
Mean photon energy: 1.55539 [MeV]
Air kerma rate constant, Γ_{10} : 5.885×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 5.886×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.561×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

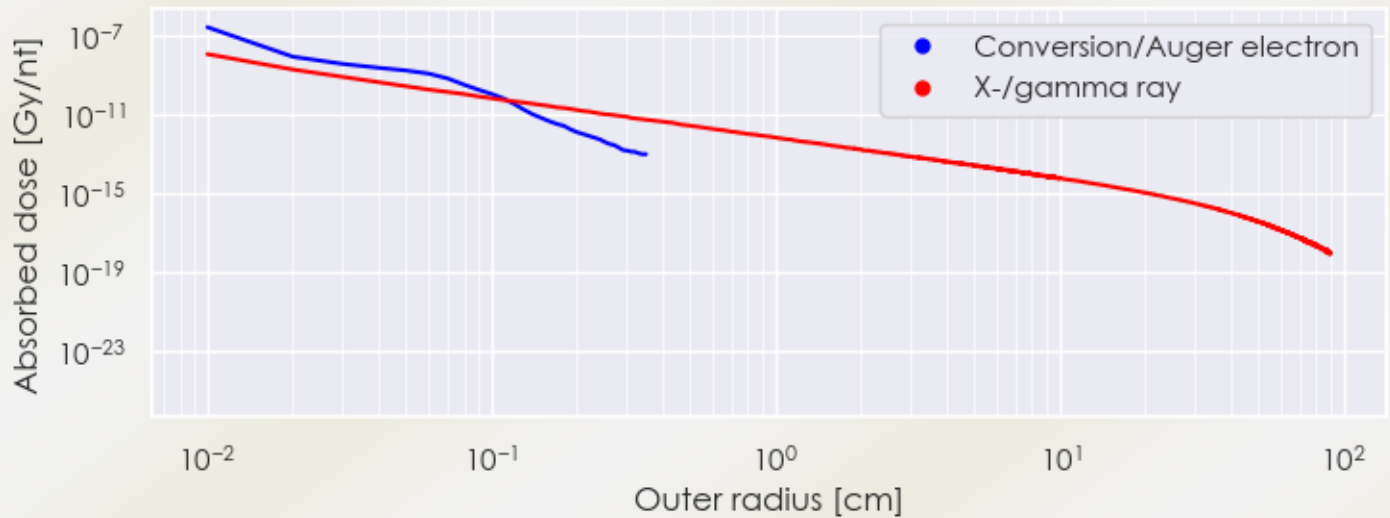
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 4.561×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.492×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

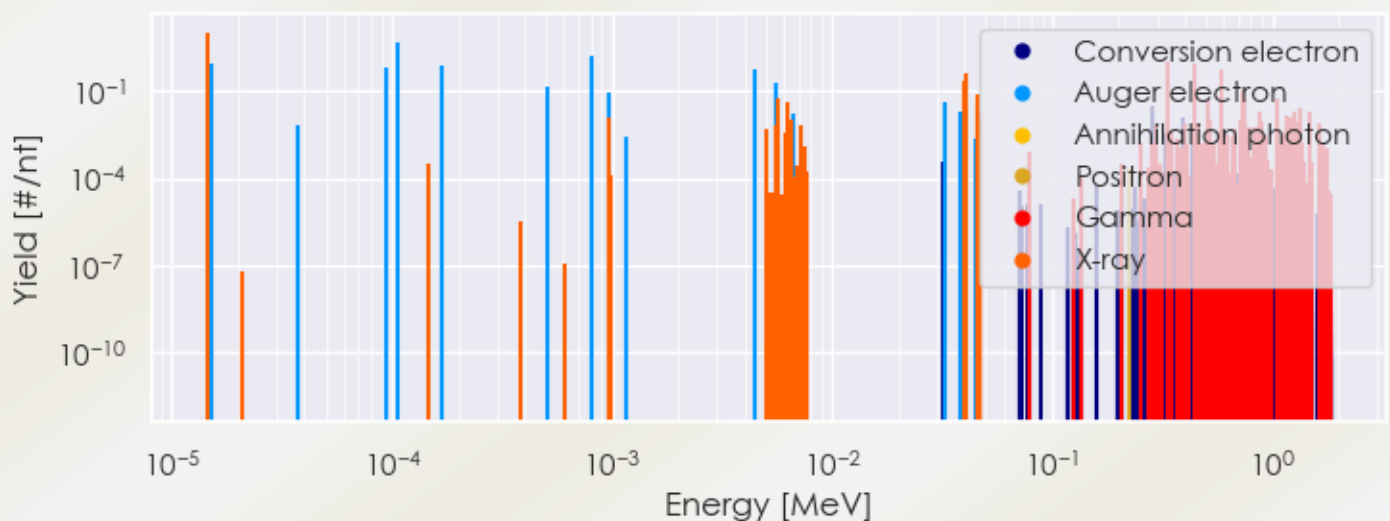
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Eu-150 DPK.csv

SUMMARY SPECTRA (PLOT)

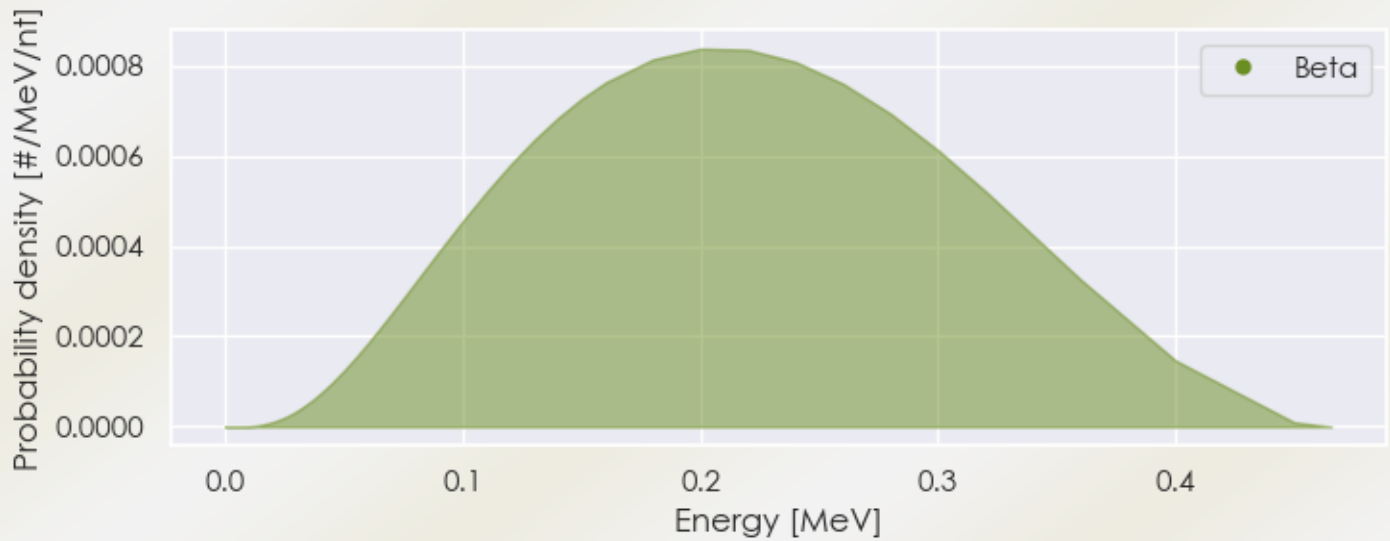
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Eu-150 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/Eu-150 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/Eu-150 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.45293e-05	1.033e+01	X-ray
9.69808e-04	1.205e-02	X-ray
5.62210e-03	5.984e-02	X-ray
6.20531e-03	3.799e-02	X-ray
3.95578e-02	2.294e-01	X-ray
4.01680e-02	4.152e-01	X-ray
4.53440e-02	4.161e-02	X-ray
4.54683e-02	8.051e-02	X-ray
4.66259e-02	1.752e-02	X-ray
3.33971e-01	9.600e-01	Gamma

4.39401e-01	8.035e-01	Gamma
5.05521e-01	4.800e-02	Gamma
5.84274e-01	5.261e-01	Gamma
7.12205e-01	1.085e-02	Gamma
7.37455e-01	9.600e-02	Gamma
7.48057e-01	5.184e-02	Gamma
7.51068e-01	2.141e-02	Gamma
8.69256e-01	1.853e-02	Gamma
1.04904e+00	5.376e-02	Gamma
1.17059e+00	1.334e-02	Gamma
1.19711e+00	1.133e-02	Gamma
1.24697e+00	1.910e-02	Gamma
1.34378e+00	2.592e-02	Gamma
1.48549e+00	1.901e-02	Gamma
1.51033e-05	8.090e-01	Auger electron
9.44302e-05	6.611e-01	Auger electron
1.06694e-04	4.320e+00	Auger electron
1.68931e-04	6.941e-01	Auger electron
5.12413e-04	1.442e-01	Auger electron
8.04032e-04	1.475e+00	Auger electron
9.74477e-04	9.450e-02	Auger electron
4.46316e-03	5.487e-01	Auger electron
5.51389e-03	1.876e-01	Auger electron
6.59867e-03	1.601e-02	Auger electron
3.25196e-02	3.960e-02	Auger electron
3.84443e-02	1.930e-02	Auger electron
2.87095e-01	3.080e-02	Conversion electron
3.92525e-01	1.199e-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