

	Eu-142 (2.34s) ECB+	Eu-143 (2.59m) ECB+	Eu-144 (10.2s) ECB+	Eu-145 (5.93d) ECB+	Eu-146 (4.61d) ECB+	Eu-147 (24.1d) ECB+A	Eu-148 (54.5d) ECB+A	
Sm-139 (2.57m) ECB+	Sm-140 (14.82m) ECB+	Sm-141 (10.2m) ECB+	Sm-142 (7.0m) ECB+	Sm-143 (8.75m) ECB+	Sm-144 (3.07y) EC	Sm-145 (340d) EC	Sm-146 (1.03E+8y) A	Sm-147 (1.060E11y) A
	Pm-139 (4.15m) ECB+	Pm-140 (9.2s) ECB+	Pm-141 (20.90m) ECB+	Pm-142 (265d) EC	Pm-143 (363d) EC	Pm-144 (17.7y) ECA	Pm-145 (5.53y) ECB-	Pm-146

SAMARIUM-143

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sm-143
Atomic number (Z): 62
Mass number (A): 143
Neutron number (N): 81

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 8.75 [m]
Decay constant: $1.3203\text{e-}03$ [1/s]
Daughters: Pm-143 (100.0%)
Radioactive daughters: Pm-143

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.49778 [MeV]
Mean photon energy: 0.5289 [MeV]
Air kerma rate constant, Γ_{10} : $3.161\text{e-}18$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $2.071\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $7.975\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

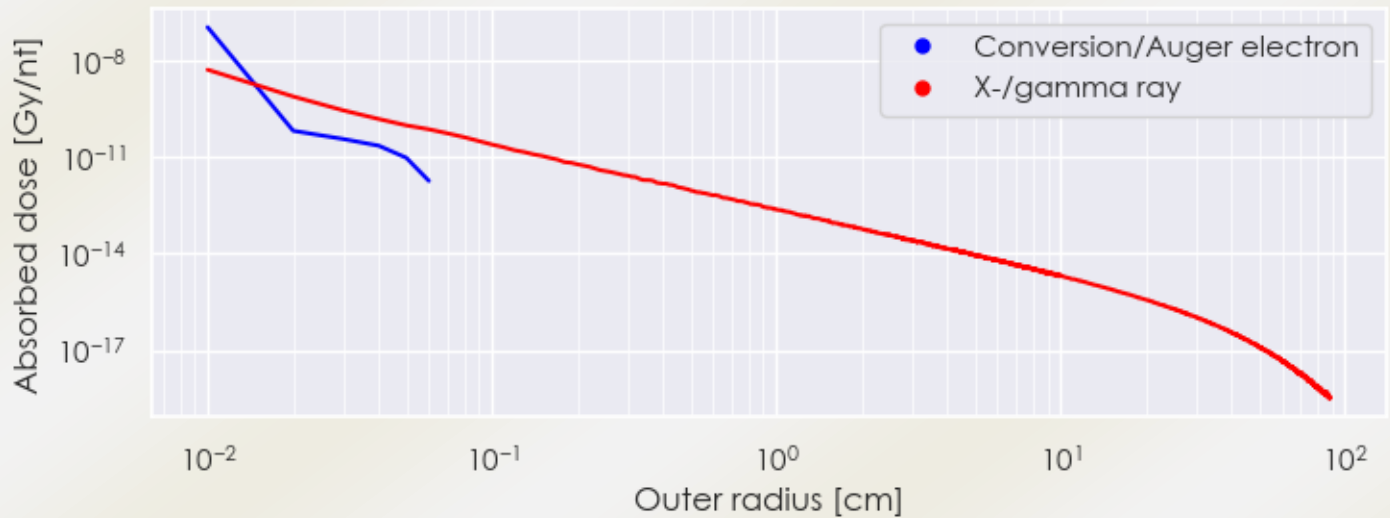
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 7.975×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 8.474×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

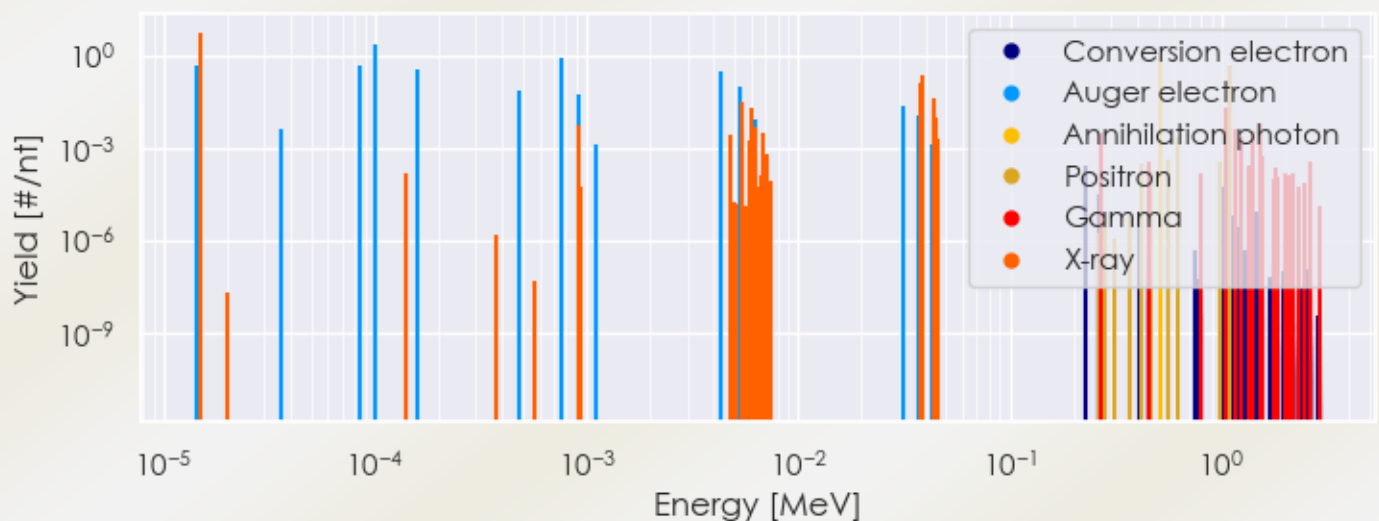
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sm-143 DPK.csv

SUMMARY SPECTRA (PLOT)

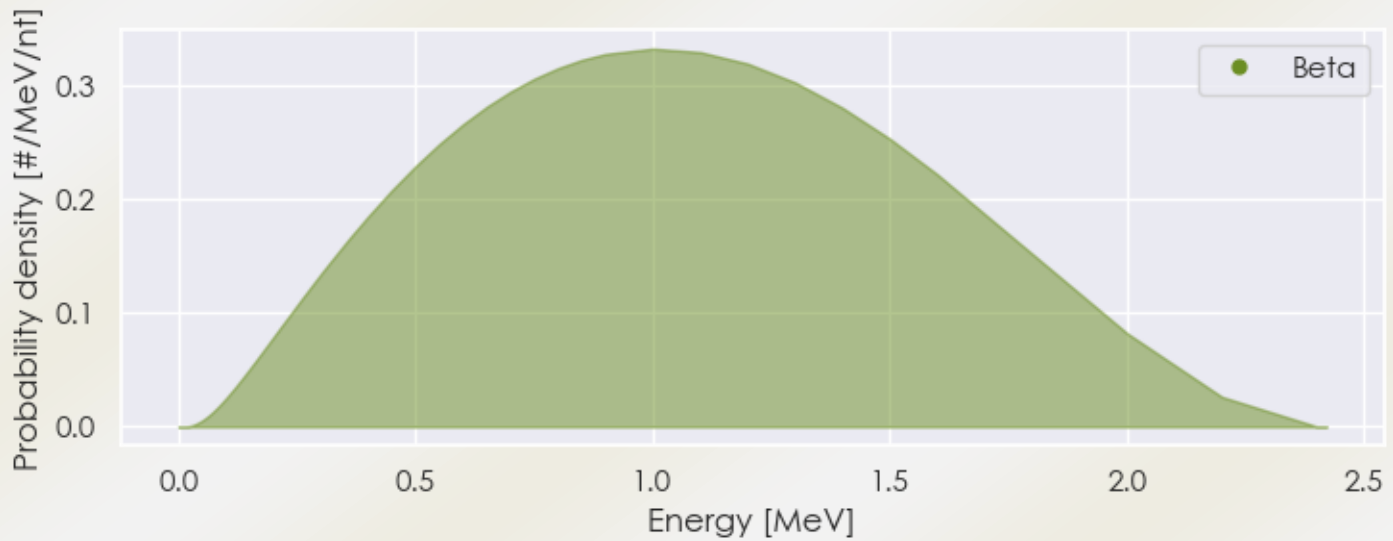
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Sm-143 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/Sm-143 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/Sm-143 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.48434e-05	5.543e+00	X-ray
5.41729e-03	2.992e-02	X-ray
5.95960e-03	1.863e-02	X-ray
3.81996e-02	1.226e-01	X-ray
3.87671e-02	2.226e-01	X-ray
4.37575e-02	2.215e-02	X-ray
4.38721e-02	4.287e-02	X-ray
5.11000e-01	9.065e-01	Annihilation photon
1.05658e+00	1.900e-02	Gamma
1.09286e+00	4.497e-01	Positron

1.43706e-05	4.844e-01	Auger electron
8.53150e-05	4.515e-01	Auger electron
1.00559e-04	2.218e+00	Auger electron
1.59760e-04	3.575e-01	Auger electron
4.75616e-04	7.077e-02	Auger electron
7.56020e-04	7.715e-01	Auger electron
9.22854e-04	5.123e-02	Auger electron
4.30052e-03	2.901e-01	Auger electron
5.30046e-03	9.840e-02	Auger electron
3.14373e-02	2.232e-02	Auger electron
3.71303e-02	1.080e-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