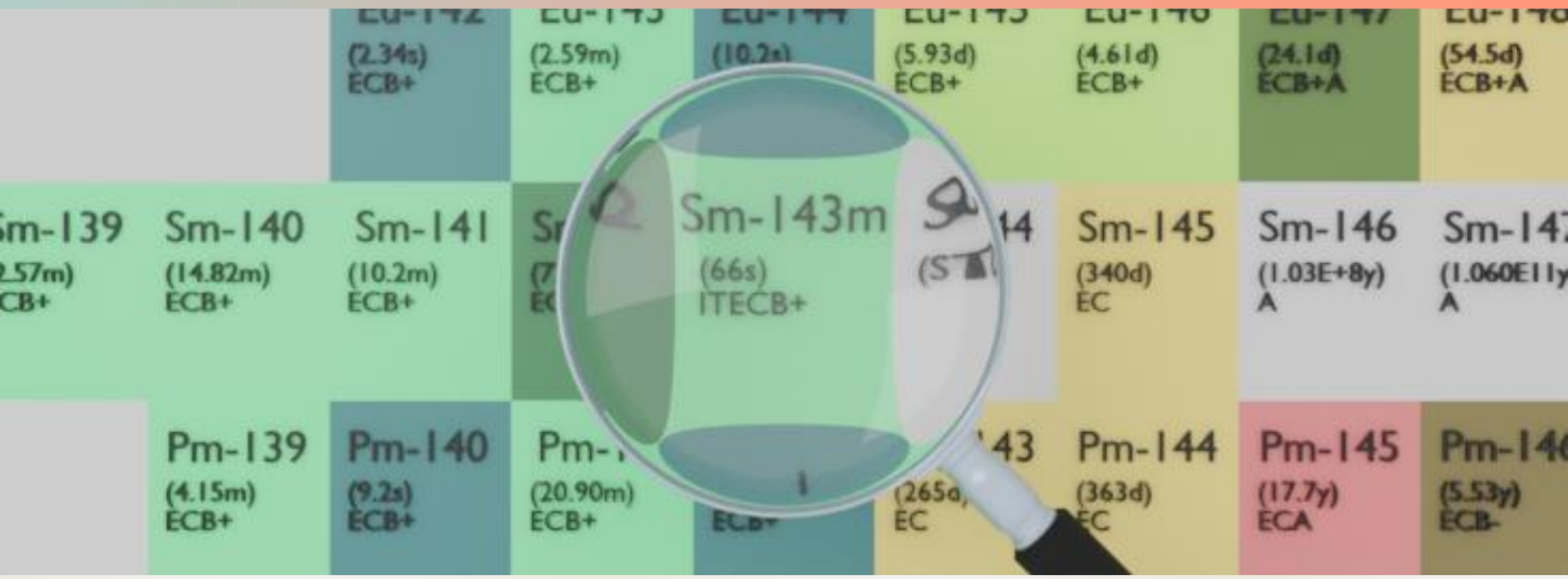


SAMARIUM-143M

SUMMARY DATA

GENERAL

CLASSIFICATION

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

RADIOACTIVE DECAY

Decay modes: β+, Electron capture, Internal transition
Half-life: 66.0 [s]
Decay constant: 1.0502e-02 [1/s]
Daughters: Sm-143 (99.8%), Pm-143 (0.24%)
Radioactive daughters: Sm-143, Pm-143

DOSIMETRIC CONSTANTS

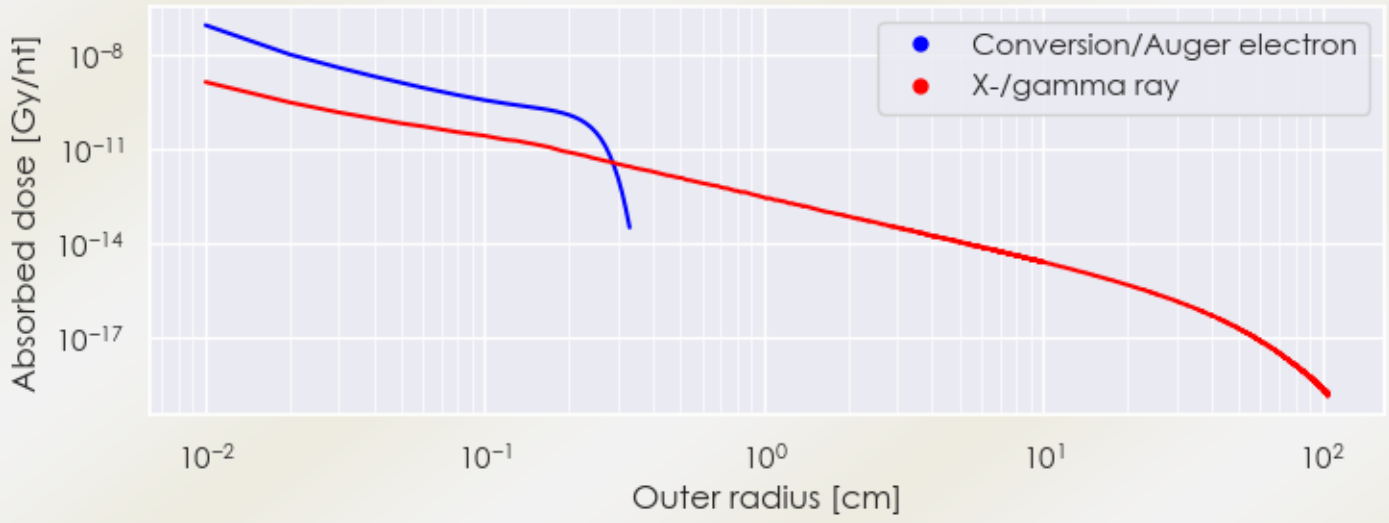
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.072 [MeV]
Mean photon energy: 0.68442 [MeV]
Air kerma rate constant, Γ_{10}: 2.547e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air}: 2.551e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.154e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}: 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta^-,\beta^+,e^-}$: 1.154e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_p: 1.097e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

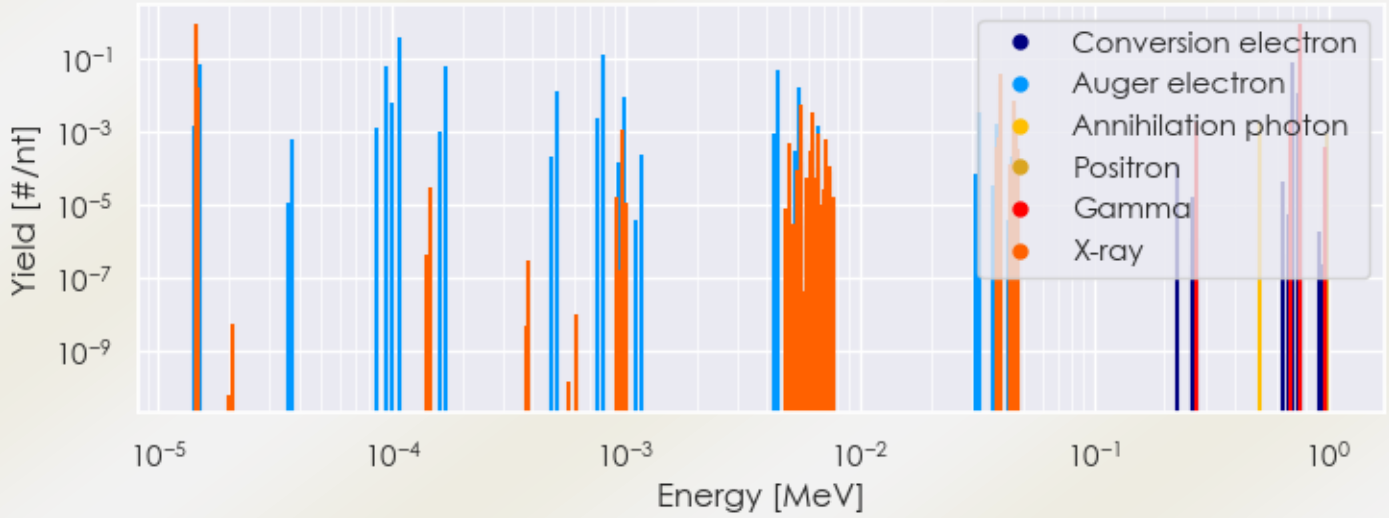
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

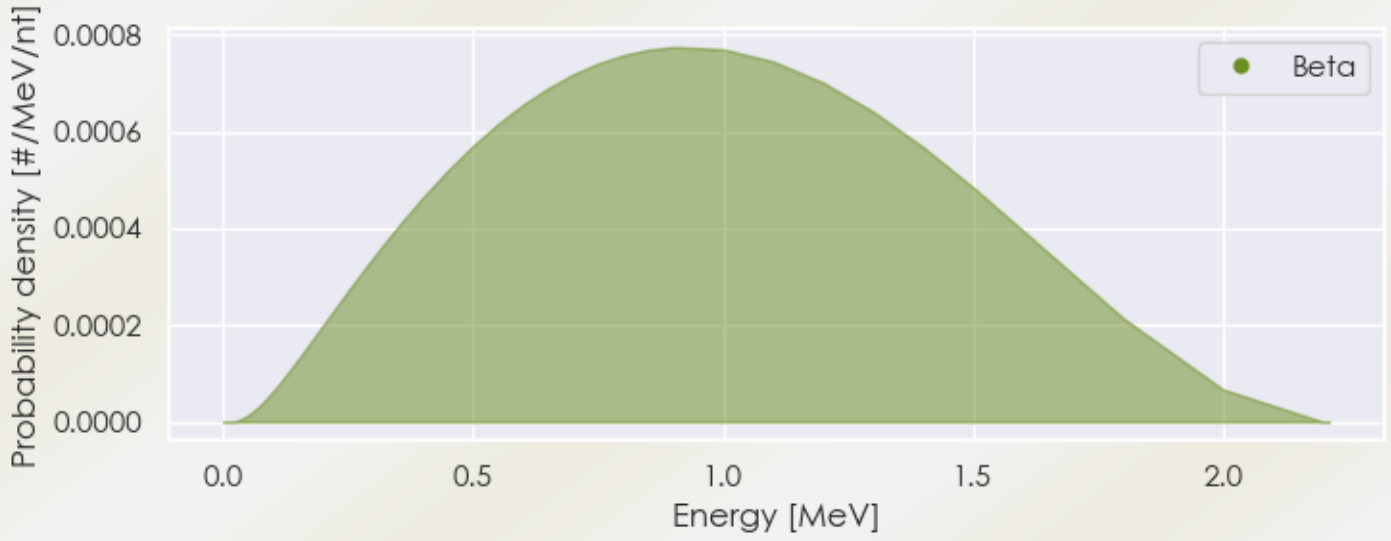
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.45288e-05	9.552e-01	X-ray
1.48434e-05	1.673e-02	X-ray
3.95578e-02	2.088e-02	X-ray
4.01680e-02	3.779e-02	X-ray
7.54400e-01	8.988e-01	Gamma
1.51033e-05	7.482e-02	Auger electron
9.42969e-05	6.116e-02	Auger electron
1.06710e-04	3.992e-01	Auger electron
1.69051e-04	6.388e-02	Auger electron

5.09566e-04	1.290e-02	Auger electron
8.03879e-04	1.367e-01	Auger electron
4.46149e-03	5.091e-02	Auger electron
5.51187e-03	1.741e-02	Auger electron
7.07524e-01	7.842e-02	Conversion electron
7.46698e-01	1.212e-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