



	11-44 (60.0y) EC	11-45 (184.8m)	11-46 (STABLE)	11-47 (STABLE)	11-48 (STABLE)	11-49 (STABLE)
		Sc-44m (58.61h) ITEC	Sc-45 (3.083y) EC	Sc-46 (83.79d) B-	Sc-47 (3.3492d) B-	Sc-48 (43.67h) B-
Ca-40 (STABLE)	Ca-41 (1.02E+5y) EC	Ca-42 (STABLE)	Ca-44 (STABLE)	Ca-45 (162.67d) B-	Ca-46 (STABLE)	Ca-47 (4.536d) B-

SCANDIUM-44M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Sc-44m
Atomic number (Z): 21
Mass number (A): 44
Neutron number (N): 23

RADIOACTIVE DECAY

Decay modes: Electron capture, Internal transition
Half-life: 58.61 [h]
Decay constant: 3.2851×10^{-6} [1/s]
Daughters: Sc-44 (98.8%), Ca-44 (1.2%)
Radioactive daughters: Sc-44

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.03278 [MeV]
Mean photon energy: 0.27433 [MeV]
Air kerma rate constant, Γ_{10} : 9.861×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 9.861×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.252×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

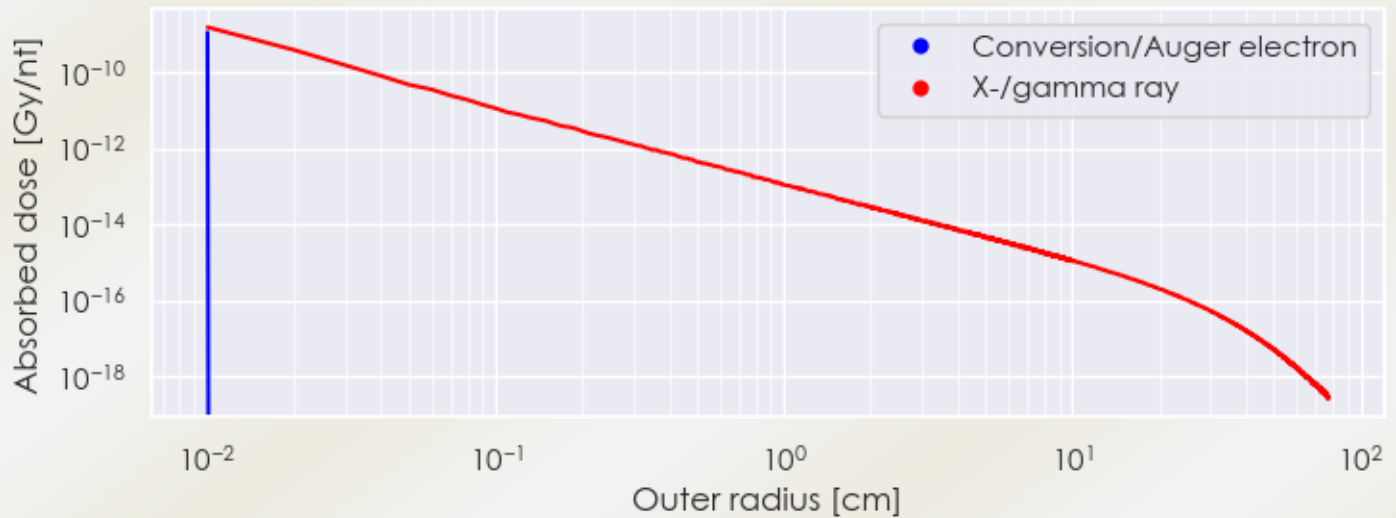
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-\beta+,e-}$: 5.252e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.395e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

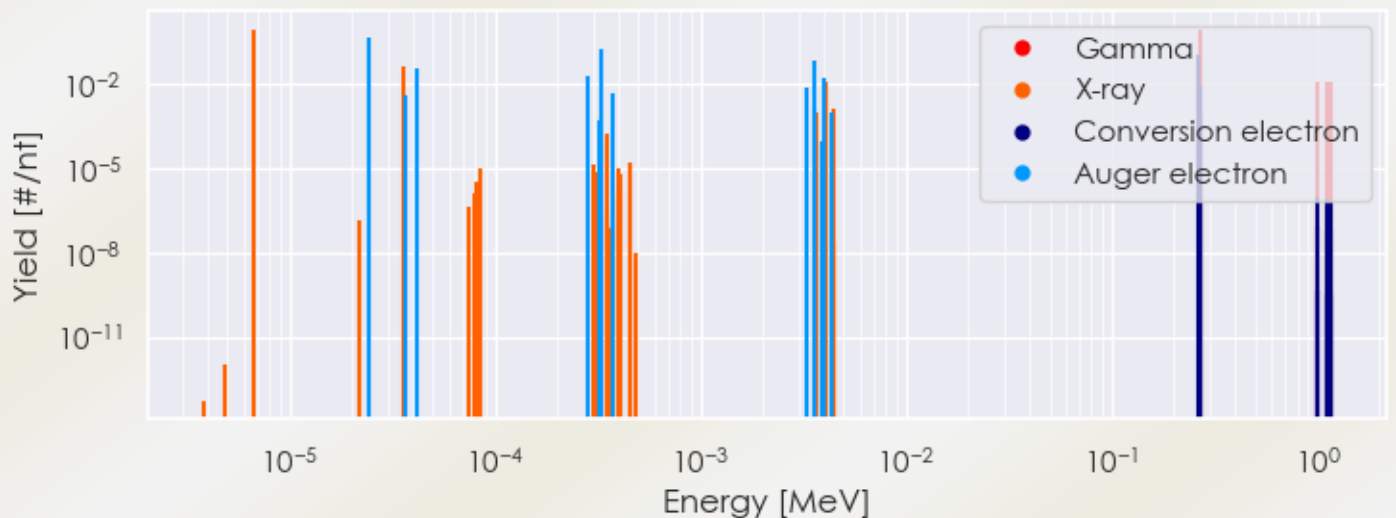
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Sc-44m 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/Sc-44m Summary 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/Sc-44m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Sc-44m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# /nt] if > 0.01	Radiation type
6.75424e-06	9.192e-01	X-ray
3.63267e-05	4.391e-02	X-ray
4.05694e-03	1.224e-02	X-ray
2.70900e-01	8.668e-01	Gamma
1.00183e+00	1.200e-02	Gamma
1.12606e+00	1.200e-02	Gamma
1.15700e+00	1.200e-02	Gamma
2.43858e-05	4.786e-01	Auger electron
4.16821e-05	3.957e-02	Auger electron
2.85648e-04	1.833e-02	Auger electron
3.31035e-04	1.853e-01	Auger electron
3.60876e-03	7.229e-02	Auger electron
3.99167e-03	1.641e-02	Auger electron
2.66434e-01	1.101e-01	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