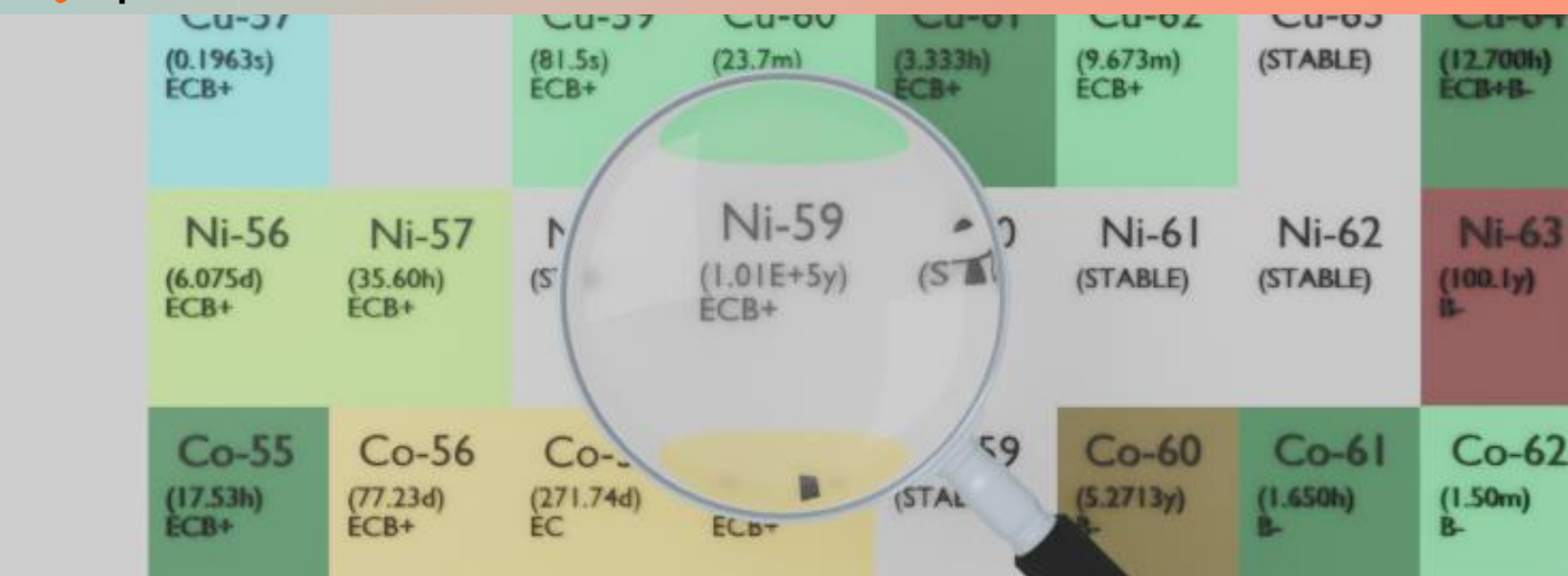




NICKEL-59

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ni-59
Atomic number (Z): 28
Mass number (A): 59
Neutron number (N): 31

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 101000.0 [y]
Decay constant: $2.1747\text{e-}13$ [1/s]
Daughters: Co-59 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

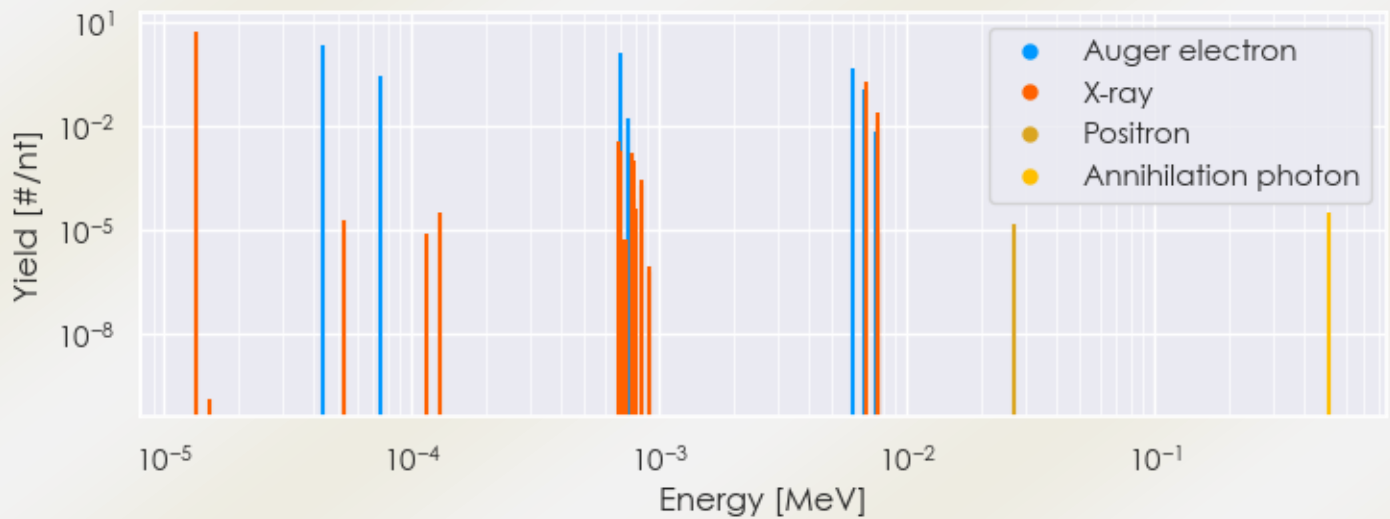
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.00453 [MeV]
Mean photon energy: 0.00236 [MeV]
Air kerma rate constant, Γ_{10} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $5.884\text{e-}22$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $7.258\text{e-}16$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
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, $\Delta_{\beta,\beta^+,e^-}$: 7.258×10^{-16} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.781×10^{-16} [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

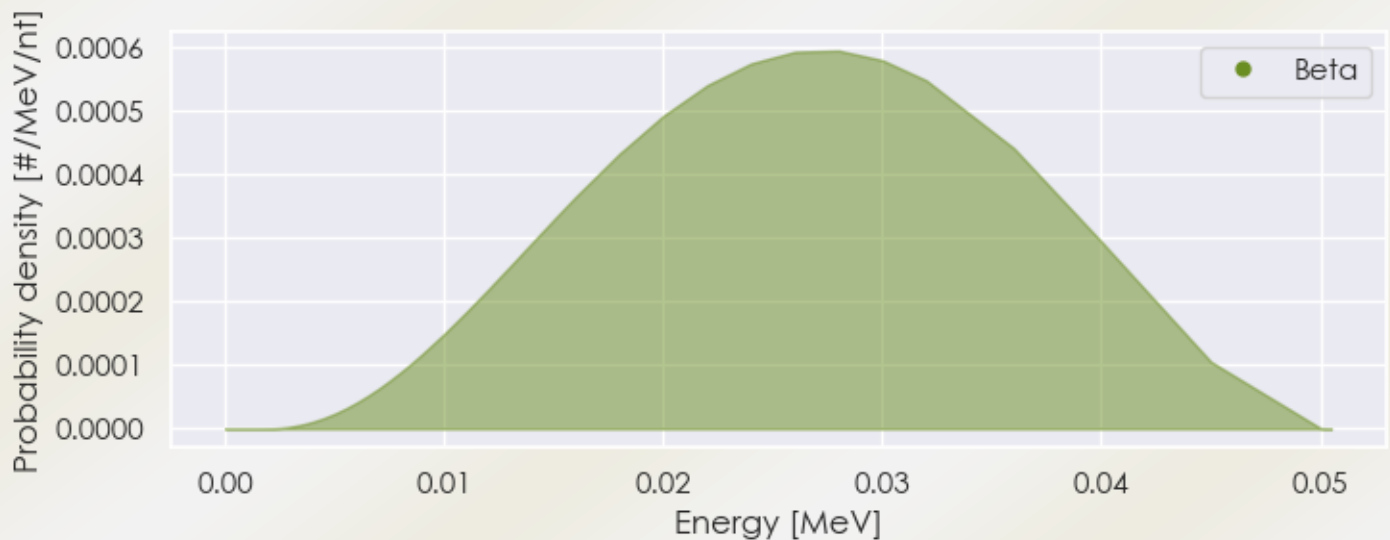
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Ni-59 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ni-59%20Summary%20Spectrum.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/Ni-59 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ni-59%20Beta%20Spectrum.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/Ni-59 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Ni-59%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# /n _t] if > 0.01	Radiation type
1.35365e-05	5.413e+00	X-ray
6.87316e-03	9.838e-02	X-ray
6.88840e-03	1.924e-01	X-ray
7.60650e-03	1.194e-02	X-ray
7.60846e-03	2.345e-02	X-ray
4.38318e-05	2.219e+00	Auger electron
7.49251e-05	2.613e-01	Auger electron
6.98258e-04	1.358e+00	Auger electron
7.45014e-04	1.587e-02	Auger electron
6.03079e-03	4.420e-01	Auger electron
6.77509e-03	1.094e-01	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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6