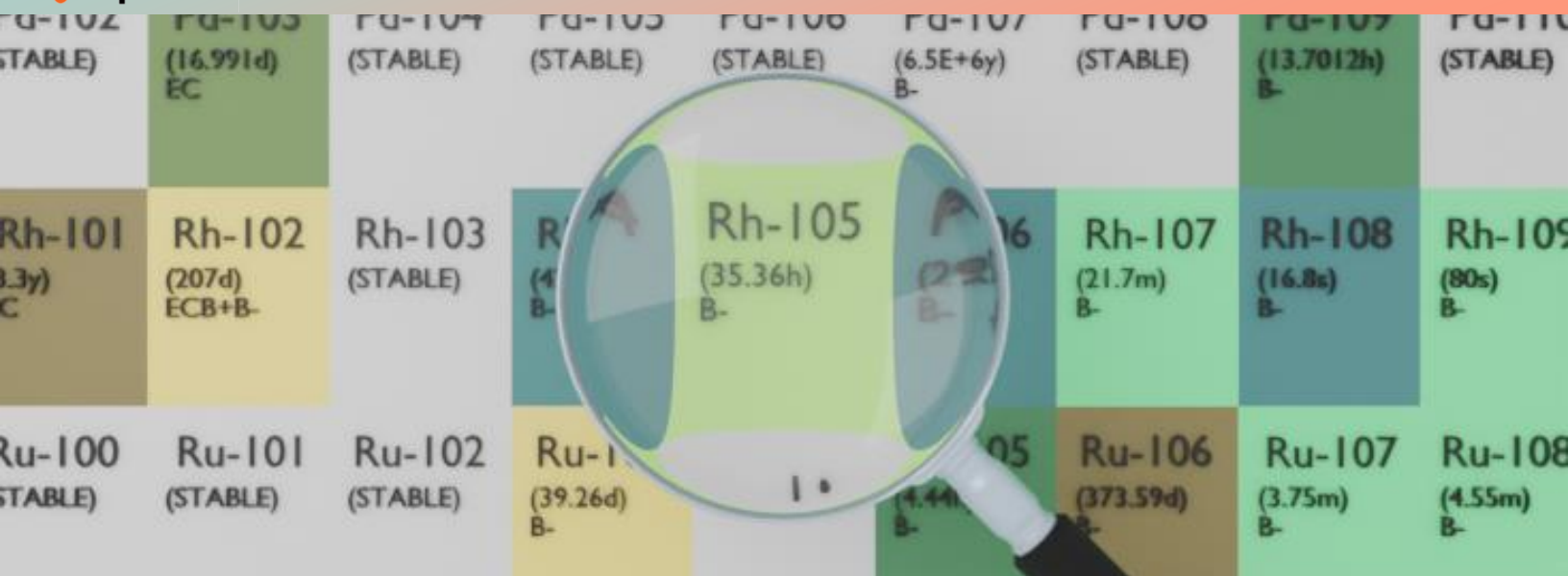




The image shows a portion of a periodic table of radionuclides. A magnifying glass is positioned over the Rh-105 entry, which is highlighted in yellow. The table includes various isotopes of Rhodium (Rh) and Ruthenium (Ru), along with their half-lives and decay modes. The highlighted entry for Rh-105 shows a half-life of 35.36h and a beta-minus decay mode.

Isotope	Half-life	Decay Mode
Rh-101	3.3y	EC
Rh-102	(207d)	ECB+B-
Rh-103	(STABLE)	
Rh-104	(STABLE)	
Rh-105	(35.36h)	B-
Rh-106	(22.3h)	B-
Rh-107	(21.7m)	B-
Rh-108	(16.8s)	B-
Rh-109	(80s)	B-
Ru-100	(STABLE)	
Ru-101	(STABLE)	
Ru-102	(STABLE)	
Ru-103	(39.26d)	B-
Ru-104	(4.44h)	B-
Ru-105	(373.59d)	B-
Ru-106	(3.75m)	B-
Ru-107	(4.55m)	B-

RHODIUM-105

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Rh-105
Atomic number (Z): 45
Mass number (A): 105
Neutron number (N): 60

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 35.36 [h]
Decay constant: 5.4452×10^{-6} [1/s]
Daughters: Pd-105 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.15331 [MeV]
Mean photon energy: 0.07727 [MeV]
Air kerma rate constant, Γ_{10} : 2.897×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 2.897×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.456×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

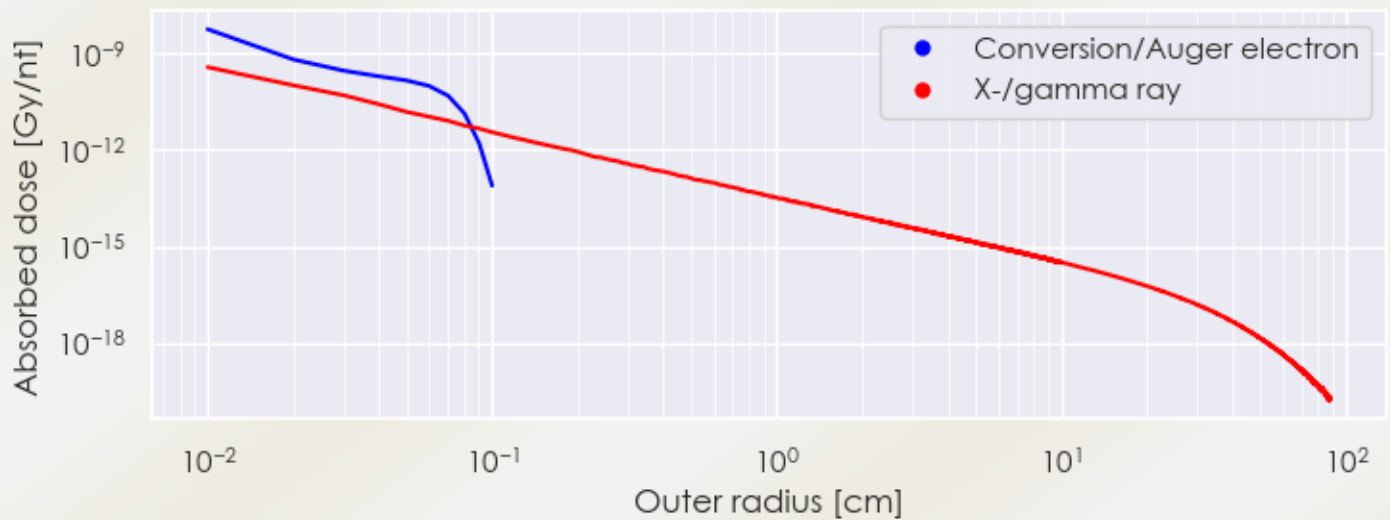
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 2.456×10^{-14} [Gy · kg/Bq · s]

Equilibrium dose constant for photons, Δ_p : 1.238×10^{-14} [Gy · kg/Bq · s]

DOSE POINT KERNELS (PLOT)

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

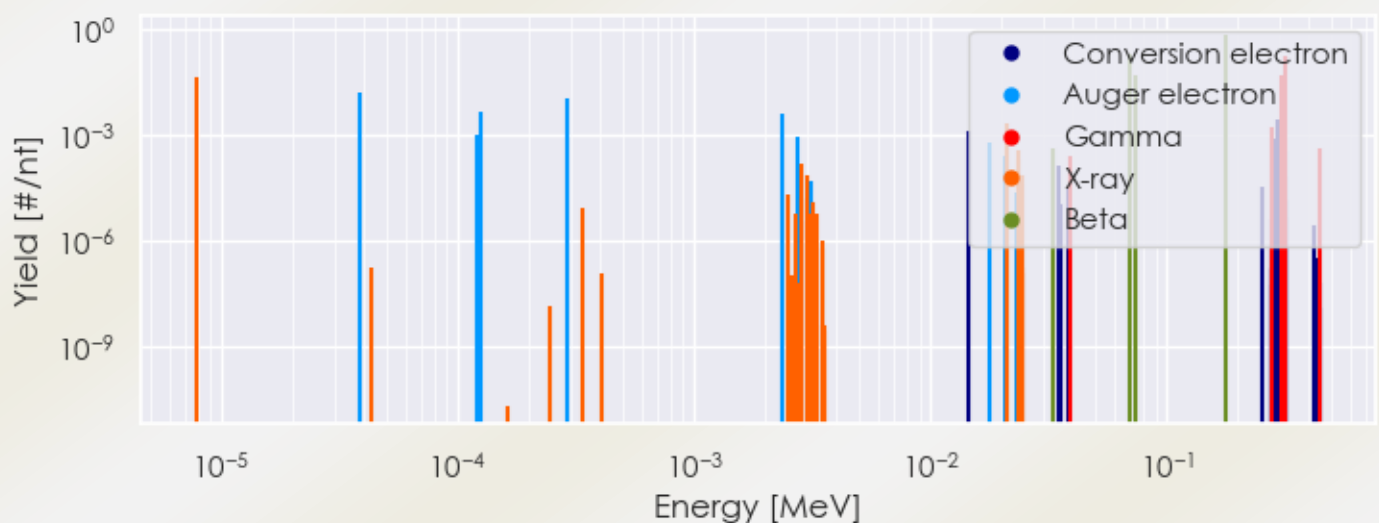
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Rh-105 DPK.csv

SUMMARY SPECTRA (PLOT)

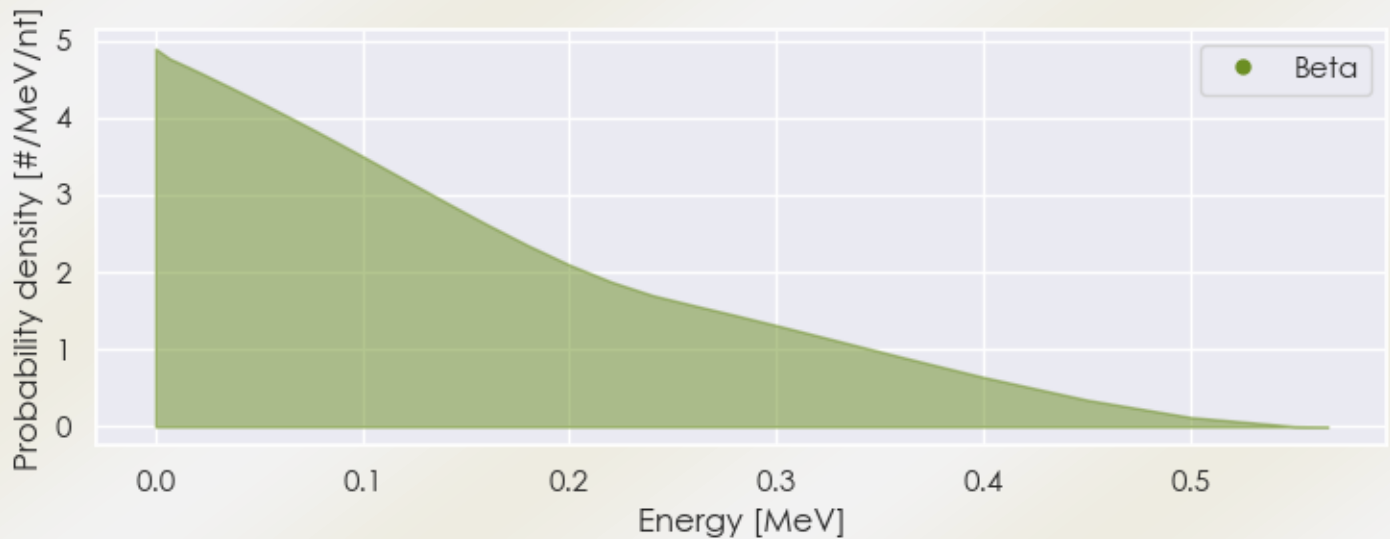
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Rh-105 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/Rh-105 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/Rh-105 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.85949e-06	4.632e-02	X-ray
3.06100e-01	5.100e-02	Gamma
3.18900e-01	1.910e-01	Gamma
6.96602e-02	1.971e-01	Beta
7.36769e-02	5.203e-02	Beta
1.79104e-01	7.504e-01	Beta
3.82038e-05	1.744e-02	Auger electron
2.92844e-04	1.133e-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