

# RADIONUCLIDE DATA SHEET

[COPPER]

Cu-64

29 protons

35 neutrons

**Half Life:** 12.701 hours

**Radiation:** Decay Mode: Electron Capture 61%; Beta 39%

**Gamma Constant:** 1.47 mR/hr per 1 mCi at 30 cm

**Major Betas:**

Max E(MeV)	Avg E (MeV)	# per 100 dis
0.578	0.19	37
<b>Major</b>	<b>Positrons:</b>	
0.653	0.278	18

Max. Beta Range in Air : 240 cm

Max. Beta Range in Water : 0.25 cm

**Major Gammas:**

E(MeV)	# per 100 Dis
1.346	0.5

Average gamma E = 1.346 MeV

**Intake Data (annual):**

Minimum Ingestion: 10000  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

Minimum Inhalation: 20000  $\mu$ Ci equals 5 rem TEDE (WHOLE BODY)

**Doses:**

**Skin Dose:** Reported for 1  $\mu$ Ci over 10 cm<sup>2</sup> of skin  
13.3 mrad/hr (gamma dose)

Point Source: 320 mrad/hr (beta dose)

Disk Source: 321 mrad/hr (beta dose)

**Shielding Information:**

Maximum Range For Beta	Plastic	0.25 cm
	Aluminum	0.1 cm
Tenth Value Thickness For Average Gamma:	Concrete	18 cm
	Lead	3.5 cm

**Detection information:** Usable Detectors listed with estimate efficiencies

Ludlum 3 w/ pancake probe at 1 cm	6%	Liq. Scint. Counter	60%
Ludlum 3 w/ NaI probe near surface	<1%	Gamma Counter	<1%

**Action Quantities:**

Bench Top Quantity Must Be Less Than	100000 $\mu$ Ci
Containers Require Labeling When Greater Than	1000 $\mu$ Ci
Rooms Require Posting When There Is Greater Than	10000 $\mu$ Ci
Contamination Lasting More than 24 hrs Require NRC Notification At	50000 $\mu$ Ci