

Radionuclide Safety Data Sheet

1. Material

Isotope: Copper-67 [⁶⁷Cu]

Chemical Form: Solid Cu-67 dissolved in HCl
(See HCl SDS for more specific information)

Recommended Use: Research Only

Uses advised against: Not for human use

Company: Idaho State University
Idaho Accelerator Center
1500 Alvin Ricken Drive
Pocatello, ID 83201
Tel: +1 (208) 282-3427

2. Physical Data

Photon Energy: 185 keV (49%), 93 keV (16%), 91 keV (7%)

Beta Energy (max): 390 keV (57%), 482 keV (22%), 575 keV (20%),

Physical Half-Life: 2.58 days

Specific Activity: 7.6 x 10⁵ Ci/gram

3. Radiological Data

Radiological Toxicity Rating: Group 3 (moderate)

Critical Organ: GI Tract (LLI)

Routes of Intake: Inhalation, Ingestion, Absorption, Injection

Biological Half-Life: 3.78 days

Effective Half-Life: 1.53 days

Committed Effective Dose Equivalent:

Ingestion:	1 mrem/μCi	(0.27 mSv/MBq)
Skin Contamination:	4.9 rem/hr/μCi/cm ²	(1.3 mSv/hr/kBq/cm ²)

4. Regulatory Compliance Information

Derived Air Concentration (DAC)	Annual Limit of Intake (ALI):
Inhalation (Class D): 3E-6 μCi/ml	Ingestion: 5000 μCi
	Inhalation (Class D): 8000 μCi

Class D is the only applicable form of Cu-67 available from this institution.

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5. Exposure

Specific Gamma Constant: 8.7×10^{-2} mR/hr/mCi @ 1 meter
(2.36×10^{-5} mSv/hr/MBq @ 1 meter)

Gamma exposure rate from 1 mCi point source – unshielded

Distance (cm)	Exposure (mR/hr)
1	870
5	35
10	8.7
100	0.09

6. Shielding

Half-Value Layer (HVL)

HVL for lead: 0.04 inches (<0.1 cm)

HVL for steel: 0.43 inches (1.1 cm)

Tenth-Value Layer (TVL)

TVL for lead: 0.08 inches (0.2 cm)

TVL for steel: 1.18 inches (3.0 cm)

7. Instrumentation Equipment

Instrument	Est. Efficiency
Geiger-Müller (G-M) Counter	15%-18%
NaI Scintillation Crystal	3%-5%
Gamma Spectrometer (e.g. HPGe)	60%
Liquid Scintillation Counter	10%

8. Radiation Monitoring

OSL/TLD Monitoring: Recommended for both whole-body and extremity

Urine bioassay (taken 24 hours after event) or whole-body counting may be required for a suspected uptake

9. References

Title 10 of the Code of Federal Regulations Part 20
Environmental Protection Agency, Federal Guidance Report No. 11
Johnson, Health Physics and Radiological Health, Fourth Edition; 2012
Delacoix et al, Radiation Protection Dosimetry – Radionuclide and Radiation Protection Data Handbook; 2002. (Kent, England: Nuclear Technology Publishing, 2002)