

# <sup>67</sup>Cu

## Radioisotope Fact Sheet Copper 67

**Half life** 2.58 days

### Radiations emitted

Radiation	Energy (keV)	Yield(%)
Beta ray	390 - max, 121 - average	57
Beta ray	482 - max, 154 - average	22
Beta ray	575 - max, 189 - average	20
Gamma ray	91	7
Gamma ray	93	16
Gamma ray	195	49

### Safety precautions

<sup>67</sup>Cu is a medium energy beta and gamma ray emitter that presents internal and external radiation hazard.

Handling tools and standard laboratory PPE (gloves, lab coat, safety glasses) should be used to minimise exposure.

The RSO should carefully monitor stored wastes to ensure that radiation levels in controlled areas do not exceed 40 µSv per week, and in areas accessible to non-radiation workers, 10 µSv per week.

### Radiotoxicity data

<sup>67</sup>Cu is classed as being of moderate hazard (Group 3) according to AS/NZS 2243.4.

The Annual Limit on Intake by ingestion (ALI<sub>ing</sub>) is 59 MBq and the most restrictive inhalation limit (ALI<sub>inhal</sub>) is 34 MBq.

### Dose rates

The gamma ray dose rate constant is 24 µSv/h/ GBq at 1 m.

Dose rate to the basal skin cells from contamination of 1 kBq cm<sup>-2</sup>: 1320 µSv h<sup>-1</sup>

Dose rate from a 1 kBq (0.05 ml) droplet on skin: 465 µSv h<sup>-1</sup>

### Shielding

Total absorption of beta radiation: 1.5 mm perspex

Half value layer (HVL) for gamma rays: less than 1 mm lead

Tenth value layer (TVL) for gamma rays: 2 mm lead

### Licensing requirements

Under the *Radiation Safety Regulation 2021*, a licence is required for the possession of <sup>67</sup>Cu sources with concentrations of greater than or equal to 100 Bq per gram and with activities of 1 MBq or greater. A use licence is also required for any persons who use such sources for research purposes.

### Disposal data

The maximum concentration of <sup>67</sup>Cu in aqueous wastes released to a sewerage system is given in the Regulation as 4 MBq per m<sup>3</sup> i.e. 4 kBq per litre.

The concentration of <sup>67</sup>Cu in solid wastes disposed of to either the general or pathology waste streams must be less than 50 Bq per gram (50 kBq per kg) – i.e. half the concentration limit for licensing.

### Radiation detection and monitoring

Either a Geiger Muller tube or scintillation monitor is suitable for contamination control. For personal monitoring, TLD/OSL dosimeters are recommended for both whole body and extremity monitoring.

### Laboratory requirements

Indicative maximum activities:

Low level	Bench	1 MBq
	Fume cupboard	10 MBq
Medium level	Bench	4 MBq
	Fume cupboard	40 MBq