Stanford | Environmental Health & Safety

RADIONUCLIDE SAFETY DATA SHEET

RADIONUCLIDE: Sb-125/Te-125m | **FORMS: Soluble**

PHYSICAL CHARACTERISTICS

HALF-LIFE: 2.76 years

DECAY EMISSIONS

Assuming equilibrium

Gammas / X-rays		Betas / Positrons (+) / Electrons*		Alphas	
E (keV)	%	E (keV, Ave)	%	E (keV)	%
27	136	77*	51		
428	30	87	40		
601	18	105	20		
636	11	35	18		

- Only 4 most probable emissions per decay type included. Emissions below 10 keV or 1% excluded.

STANFORD HAZARD CATEGORY

C – level (low hazard): **≤ 20 mCi**

B – level (moderate hazard): **> 20 mCi, ≤ 1 Ci**

A – level (high hazard): **> 1 Ci**

EXTERNAL RADIATION HAZARDS

Gamma dose rate, point source at 1 ft, 1 mCi:
3 mrem/h

Beta dose rate to skin, point source at 1 ft, 1 mCi:
48 mrem/h

Contamination skin dose, uniform deposit of 1 µCi per cm^2:
7400 mrem/h

INTERNAL RADIATION HAZARDS

Annual Limit on Intake: **2000 µCi** (Ingestion)
500 µCi (Inhalation)

The values above indicate the activity taken into the body that would result in either 5 rem to the whole body (CEDE) or 50 rem to an organ or tissue (CDE).

SHIELDING

Gammas/X-rays:

1.5 cm of lead will reduce the gamma dose rate by 90%.

Betas/electrons:

1.7 mm of plastic will absorb all emissions. Bremsstrahlung may be created and require additional shielding.

DOSIMETRY AND BIOASSAY REQS

Whole-body and finger-ring dosimeters are required for handling **5 mCi** or more, or **1 mCi amounts weekly**. Urine assays may be required after large spills or contaminations.

SPECIAL PROBLEMS AND PRECAUTIONS:

1. Recommended survey probe: **PGM or NaI**
2. Always wear protective gloves, a lab coat, and safety eyewear to protect the skin and eyes from contamination. Change gloves often.
3. Survey work areas before, during, and after work. Work areas may require shielding to keep dose ALARA. Instrument and smear surveys are required.
4. Segregate waste to those with half-lives greater than **120 days (excluding H3 and C14)**. Survey the waste disposal area to ensure exposure rates are less than 2 mR/hr at 1 foot.
5. Limit soluble waste to the sewer to less than **100** µCi/day per lab.

References:

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