# RADIONUCLIDE SAFETY DATA SHEET

**NUCLEIDE:** Tc-99  
**FORMS:** ALL SOLUBLE

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## PHYSICAL CHARACTERISTICS:

**HALF-LIFE:** 2.13 \( \times 10^5 \) years  
**TYPE DECAY:** beta  
  maximum energy 0.294 MeV

Hazard category:  
- **C- level** (low hazard) : 0.01 to 1 millicurie  
- **B - level** (Moderate hazard) : > 1 to 100 mCi  
- **A - level** (High hazard) : > 100 millicuries

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## EXTERNAL RADIATION HAZARDS AND SHIELDING:

- Maximum ranges of these betas are 25 feet in air, 31 inches in water and 0.025 inch in plastic.
- Dose rates vary directly with activity and over short distances inversely with the square of the distance from the source.

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## HAZARDS IF INTERNALLY DEPOSITED:

- The Annual Limit of Intake (kidney) is 400 uCi.

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## DOSIMETRY AND BIOASSAY REQUIREMENTS:

- Film badges and dosimeter rings are required if 5 millicuries are handled at any one time or millicurie levels are handled on a frequent (daily) basis.
- Urine assays may be required after spills or contamination incidents.

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## SPECIAL PROBLEMS AND PRECAUTIONS:

2. Because of the extremely long half-life, contamination prevention and control is very important. Cover work areas (and possible floor areas) with disposable plastic-backed absorbent paper. Animal cages must be totally enclosed to avoid contamination from urine or bedding.
3. Segregate wastes to those with half-lives greater than 90 days.
4. Limit of soluble waste to sewer is 10 microcuries/ day per lab.

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