



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire



Canadian Nuclear Safety Commission

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Radiation Safety Data Sheet

This data sheet presents information on radioisotopes only.

For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Part 1 - RADIOACTIVE MATERIAL IDENTIFICATION

Chemical Symbol:	Tc	Common Names:	Technetium
Atomic Weight:	99m	Atomic Number:	43

Part 2 - RADIATION CHARACTERISTICS

Physical Half-Life: 6.02 hours
CNSC Exemption Quantity (in Bq): 1×10^7 (10 MBq)

A CNSC license is not required if the amount of radioactive nuclides possessed is less than one Exemption Quantity.

Principal Emissions	Average Energy (MeV)**	Maximum Energy (MeV)***	Dose Rate at 1m Distance (mSv/h/GBq)	Recommended Shielding
Neutrons	-	-	-	-
Gamma & X-rays	0.1405	-	0.033	1 mm Pb
Beta*	-	-	-	-
Alpha	-	-	-	-

* Where beta radiation is present, bremsstrahlung radiation will be produced. Shielding may therefore be required.

** Average energy of most abundant emission.

*** Maximum of most abundant emission.

Progeny	Tc-99(2.13E5 y)
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Part 3 - DETECTION AND MEASUREMENT

Method of Detection: End or side window Geiger-Mueller counter, Nal scintillation counter

Dosimetry:

External: TLD (whole body & skin) T Extremity T Neutron _____
Internal: Whole body T Thorax _____ Urine analysis T Other (specify) _____

Part 4 - PREVENTATIVE MEASURES

May emit radioactive fumes containing Mo-99 or Tc-99m when heated to decomposition.

Recommended protective clothing: Waterproof gloves should be worn during elution. Disposable plastic, latex, or rubber gloves. Lab coat (which must be monitored before leaving the laboratory). Safety glasses.

During and subsequent to elution, the eluate collection vial should be kept in a lead shield. Use syringe shields (tungsten, 1.4 mm lead equivalent) and tongs.

Laboratory equipment used for radioactive work must not be used for other purposes. Monitor equipment and supplies for loose contamination before removing from laboratory. Use disposable absorbent liners on trays.

Always use the principles of time, distance and shielding to minimize dose.

Consult CNSC license for requirements concerning engineering controls, protective equipment, and special storage requirements.

Part 5 - ANNUAL LIMIT ON INTAKE

Compound Type	Ingestion All compounds	Inhalation	
		Unspecified compounds	Oxides, hydroxides, halides, nitrates
Annual Limit on Intake (Bq)	9×10^8	1×10^9	7×10^8

EMERGENCY PROCEDURES

The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.

Personal Decontamination Techniques

- C Wash well with soap and water and monitor skin
- C Do Not abrade skin, only blot dry
- C Decontamination of clothing and surfaces are covered under operating and emergency procedures

Spill and Leak Control

- C Alert everyone in the area
- C Confine the problem or emergency (includes the use of absorbent material)
- C Clear area
- C Summon Aid

Emergency Protective Equipment, Minimum Requirements

- C Gloves
- C Footwear Covers
- C Safety Glasses
- C Outer layer or easily removed protective clothing
- C Suitable respirator selected

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