



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:	Mo	Common Names:	Molybdenum
Atomic Weight:	99	Atomic Number:	42

Part 2 - RADIATION CHARACTERISTICS

Physical Half-Life:

66 hours

CNSC Exemption Quantity (in Bq):

1×10^4 (10 kBq)

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	-	n/a		
Gamma & X-rays	0.7395	n/a	0.031	20 mm Pb
Beta*	0.4426	1.23	6.30	
Alpha	-	n/a		

* 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-99m(6.02 h), Tc-99(2.13E5 y)
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Part 3 - DETECTION AND MEASUREMENT

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

Dosimetry:

External: TLD (whole body & skin) Extremity Neutron

Internal: Whole body Thorax Urine analysis Other (specify) _____

Part 4 - PREVENTATIVE MEASURES

Molybdenum dust or powder is flammable.

Recommended protective clothing: When working with unsealed sources wear appropriate protective clothing, such as laboratory coats (which must be monitored before leaving the laboratory), coveralls, gloves, safety glasses/goggles and a suitable mask, if the radioactive material is in the form of a dust, powder or if it is potentially volatile.

Optimize time, distance, shielding. 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.

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

Part 5 - ANNUAL LIMIT ON INTAKE

Compound Type	Ingestion		Inhalation	
	Unspecified compounds	Sulphide	Unspecified compounds	Oxides, hydroxides, MoS ₂
Annual Limit on Intake (Bq)	3×10^7	2×10^7	6×10^7	2×10^7

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

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

Spill and Leak Control

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

Emergency Protective Equipment, Minimum Requirements

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

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