



## Canadian Nuclear Safety Commission 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.

<b>Part 1 - RADIOACTIVE MATERIAL IDENTIFICATION</b>			
Chemical Symbol:	Tl	Common Names:	Thallium
Atomic Weight:	201	Atomic Number:	81

<b>Part 2 - RADIATION CHARACTERISTICS</b>
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<b>Physical Half-Life:</b>	3.044 days	
<b>Unconditional Clearance Levels:</b>	Activity Concentration (Bq/g)	$1 \times 10^2$
<b>CNSC Exemption Quantity:</b>	Activity Concentration (Bq/g)	$1 \times 10^2$
	Activity (Bq)	$1 \times 10^6$

Principal Emissions	Average Energy of Most Abundant Emission (MeV)	Maximum Energy of Most Abundant Emission (MeV)	Gamma-Ray Dose Rate at 1m Distance (mSv/h per GBq) <sup>1</sup>	Shielding Information <sup>2</sup>
Neutrons	-	-	-	-
Gamma & X-ray	0.1667	-	0.024	Half-value layer (lead): <1 mm
Beta* & Electron	<0.01	-	-	Total absorption: 0.2 mm glass or 0.3 mm plastic
Alpha	-	-	-	-

\* Where beta radiation is present, bremsstrahlung radiation will be produced. Shielding for bremsstrahlung radiation must be considered.

<sup>1</sup>Shleien, B. et al, Handbook of Health Physics and Radiological Health Third Edition, 1998.

<sup>2</sup>Delacroix, D. et al, Radionuclide and Radiation Protection Data Handbook 2002.

<b>Progeny</b>	
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### Part 3 - DETECTION AND MEASUREMENT

#### Method of Detection:

Gamma probe (e.g., NaI scintillation counter)

#### Dosimetry:

External: TLD (whole body & skin)  Extremity  Neutron   
Internal: Whole body  Thyroid  Urine analysis  Other (specify) \_\_\_\_\_

### Part 4 - PREVENTATIVE MEASURES

Thallium forms toxic compounds on contact with moisture. Avoid skin contact. Thallous chloride is poisonous. Thallous 201 chloride solution may emit radioactive fumes containing Tl-201 when heated to decomposition. Thallium readily forms toxic soluble compounds when exposed to air or water.  
Recommended protective clothing: Disposable plastic, latex, or rubber gloves. Lab coat (which must be monitored before leaving the laboratory). Safety glasses.

Keep handling time to a minimum. Use syringe shields 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 liner on trays.  
Consult CNSC license for requirements concerning engineering controls, protective equipment, and special storage requirements.

### Part 5 - ANNUAL LIMIT ON INTAKE

	Ingestion	Inhalation
Compound Type	All compounds	All compounds
Annual Limit on Intake (Bq)	$2.1 \times 10^8$	$2.6 \times 10^8$



## 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. In the case of an emergency, the Radiation Safety Officer should be contacted as soon as practicable.

### 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
- 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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