



## 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:                                    | Sb  | Common Names:  | Antimony |
| Atomic Weight:                                      | 124 | Atomic Number: | 51       |

| <b>Part 2 - RADIATION CHARACTERISTICS</b> |
|---|
|---|

|  |                               |                     |
|--|-------------------------------|---------------------|
| <b>Physical Half-Life:</b>             | 60.2 days                     |                     |
| <b>Unconditional Clearance Levels:</b> | Activity Concentration (Bq/g) | 1 x 10 <sup>0</sup> |
| <b>CNSC Exemption Quantity:</b>        | Activity Concentration (Bq/g) | 1 x 10 <sup>1</sup> |
|  | Activity (Bq)                 | 1 x 10 <sup>6</sup> |

| 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       | 1.691  | -  | 0.288   | Half-value layer (lead):<br>12 mm                 |
| Beta* & Electron    | 0.1943   | 2.31   | -   | Total absorption: 5 mm glass<br>or 9.3 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> |  |
|----------------|--|

### Part 3 - DETECTION AND MEASUREMENT

**Method of Detection:**

Gamma probe (e.g., NaI scintillation detector)  
 Beta probe (e.g., end or side window Geiger-Mueller counter)

**Dosimetry:**

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

### Part 4 - PREVENTATIVE MEASURES

Antimony trichloride is a corrosive liquid or solid that is very irritating to eyes and skin. Antimony is combustible. Soluble salts of antimony are toxic. Antimony trichloride fumes slightly in air.

Recommended protective clothing: No protective clothing is necessary for work with sealed sources. When working with unsealed sources wear appropriate protective clothing, such as laboratory coats, coveralls, gloves, and safety glasses/goggles. Laboratory coats must be monitored before leaving the laboratory. Use 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. 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  |  |
|-----------------------------|-------------------|-----------------------|---|--|
|                             | All compounds     | Unspecified compounds | Oxides, hydroxides, halides, sulphides, sulphates, nitrates |  |
| Annual Limit on Intake (Bq) | $8.0 \times 10^6$ | $1.1 \times 10^7$     | $4.3 \times 10^6$   |  |



## 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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