



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.

| Part 1 - RADIOACTIVE MATERIAL IDENTIFICATION | | | |
|---|----|----------------|----------|
| Chemical Symbol: | Se | Common Names: | Selenium |
| Atomic Weight: | 75 | Atomic Number: | 34 |

| Part 2 - RADIATION CHARACTERISTICS |
|---|
|---|

| | | |
|--|-------------------------------|-----------------|
| Physical Half-Life: | 119.8 days | |
| Unconditional Clearance Levels: | Activity Concentration (Bq/g) | 1×10^0 |
| CNSC Exemption Quantity: | Activity Concentration (Bq/g) | 1×10^2 |
| | Activity (Bq) | 1×10^6 |

| 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) ¹ | Shielding Information ² |
|---------------------|--|--|---|--|
| Neutrons | - | - | - | - |
| Gamma & X-ray | 0.1360 | - | 0.232 | Half-value layer (lead): <1 mm |
| Beta* & Electron | <0.01 | - | - | Total absorption: 0.1 mm glass or 0.2 mm plastic |
| Alpha | - | - | - | - |

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

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

²Delacroix, D. et al, Radionuclide and Radiation Protection Data Handbook 2002.

| | |
|----------------|--|
| Progeny | |
|----------------|--|



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

No protective clothing is necessary for work with sealed sources. When working with unsealed sources wear appropriate protective clothing, such as laboratory coats (which must be monitored before leaving the laboratory), coveralls, gloves, and safety glasses/goggles. 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 and shielding. Monitor equipment and supplies for loose contamination before removing from laboratory. Use disposable absorbent liners on trays.

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

Part 5 - ANNUAL LIMIT ON INTAKE

| Compound Type | Ingestion | | Inhalation | |
|------------------------|-----------------------|--------------------------------|---------------------------------|--|
| | Unspecified compounds | Elemental selenium & selenides | Unspecified inorganic compounds | Elemental selenium, oxides, hydroxides, carbides |
| Annual Limit on Intake | 7.7×10^6 | 4.9×10^7 | 1.4×10^7 | 1.2×10^7 |



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. 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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