



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:	Ca	Common Names:	Calcium
Atomic Weight:	45	Atomic Number:	20

Part 2 - RADIATION CHARACTERISTICS

Physical Half-Life: 163 days

CNSC Exemption Quantity (in Bq): 1×10^6 (1 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	-	n/a	n/a	n/a
Gamma & X-rays	0.01247	n/a	n/a	n/a
Beta*	0.07723	0.257	~0	1 cm Plexiglas
Alpha	-	n/a	n/a	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	n/a
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Part 3 - DETECTION AND MEASUREMENT

Method of Detection: End-window Geiger-Mueller detector

Dosimetry:

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

Part 4 - PREVENTATIVE MEASURES

Calcium-45 is considered highly radiotoxic because of its affinity for the bone. Radiocalcium has a long biological half-life and can cause damage to the blood forming organs. Calcium reacts with water, producing hydrogen. If concentrated, the gas becomes a fire and explosion hazard. Calcium also poses a fire and explosion hazard when heated or when in contact with strong oxidizing agents.

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, safety glasses/goggles and a suitable mask, if the radioactive material is in the form of a dust, powder or if it is volatile.

Optimize time, distance, shielding. 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)	3E+07	9E+06

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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