



Canadian Nuclear Safety Services Inc.
Consultants in Radiation Safety and Hazardous Materials
Management

Visit us at: <http://www.nuclearsafety.ca>

Radiation Safety Data Sheet

This data sheet presents information on radioisotopes only. CNSS does not guarantee data accuracy.
For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Part 1 - RADIOACTIVE MATERIAL IDENTIFICATION

Chemical Symbol:	C (dioxide)	Common Names:	CARBON-14
Atomic Weight:	14	Atomic Number:	6

Part 2 - RADIATION CHARACTERISTICS

Physical Half-Life: 5730 years

A CNSC license is not required if the amount of radioactive nuclides possessed is less than one Exemption Quantity.

Principal Emissions	Approximate energies (MeV) and Intensities	Eeff (MeV)	Dose Rate at 1m Distance (mSv/hGBq)	Shielding Requires TVL Lead (cm)
Beta *	0.158	0.0495 0.049	450 @ 10cm (PF) 458 mGy @ 10cm	Range in Plexiglass 0.2cm

* Where Beta radiation is present, Bremsstrahlung radiation will be produced. Shielding may be required.

Progeny N-14 (STABLE)

Part 3 - DETECTION AND MEASUREMENT

Method of Detection: 1) Swipes in Liquid Scintillation Counter 2) Thin end window Geiger Mueller tube

Dosimetry:

External: TLD (whole body & skin) ___ Extremity ___ Neutron ___

Internal: Total body

Part 4 - PREVENTATIVE MEASURES

Low energy gamma radiation from sealed sources. No protective clothing is necessary for work with sealed sources.

Optimize time, distance, shielding. Manipulate sealed sources remotely to minimize extremity doses. Consult CNSC license for requirements concerning engineering controls, protective equipment, and special storage requirements.

Part 5 – CONTROL LEVELS
Effective Dose Coefficients

F (fast)		M (moderate)		S (slow)	
Ingestion	Inhalation	Ingestion	Inhalation	Ingestion	Inhalation
5.8E-10	6.8E-12				
Maximum release Concentration (as on current form)		Atmosphere (Bq/m ³) 5E+00	Sewer Bq/L 9E+00	Landfill/incinerator (Bq/Kg) 2E+02	
Exemption Toxicity 3.7 E+4 Bq					

Part 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.

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