



## 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:	C	Common Names:	Carbon
Atomic Weight:	14	Atomic Number:	6

<b>Part 2 - RADIATION CHARACTERISTICS</b>
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<b>Physical Half-Life:</b>	5730 years
<b>Unconditional Clearance Levels</b>	Activity Concentration (Bq/g) <span style="float: right;">1 x 10<sup>0</sup></span>
<b>CNSC Exemption Quantity</b>	Activity Concentration (Bq/g) <span style="float: right;">1 x 10<sup>4</sup></span>
	Activity (Bq) <span style="float: right;">1 x 10<sup>7</sup></span>

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)	Shielding Information <sup>1</sup>
Neutrons	-	-	-	-
Gamma & X-ray	-	-	-	-
Beta* & Electron	0.04945	0.156	-	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>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:**

Beta probe

Wipes counted by a beta probe (e.g., wipes counted by a liquid scintillation counter)

**Dosimetry:**

External: TLD (whole body & skin) \_\_\_\_\_ Extremity \_\_\_\_\_ Neutron \_\_\_\_\_

Internal: Whole body \_\_\_\_\_ Thyroid \_\_\_\_\_ Urine analysis  Other (specify) Lung, feces

### Part 4 - PREVENTATIVE MEASURES

**Hazards:**

- Carbon Monoxide: Chemical anoxia and asphyxiation
- Carbon Dioxide: asphyxiation

Recommended protective clothing: Disposable lab coat, gloves (select gloves appropriate for chemicals handled) and wrist guards. Some organic compounds can be absorbed through gloves therefore wear two pairs of gloves and change the outer layer frequently.

Use disposable absorbent liners on trays. Be careful not to generate carbon dioxide and handle potentially volatile or dusty compounds in a fume hood. Consult CNSC license for requirements concerning engineering controls, protective equipment, and special storage requirements.

### Part 5 - ANNUAL LIMIT ON INTAKE

	<b>Ingestion</b>	<b>Inhalation</b>		
Compound Type	labelled organic compounds	Vapour	Dioxide	Monoxide
Annual Limit on Intake (Bq)	$3 \times 10^7$	$3 \times 10^7$	$1 \times 10^9$	$2.5 \times 10^{10}$



## 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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