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

<table>
<thead>
<tr>
<th>Chemical Symbol:</th>
<th>C (dioxide)</th>
<th>Common Names:</th>
<th>CARBON-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atomic Weight:</td>
<td>14</td>
<td>Atomic Number:</td>
<td>6</td>
</tr>
</tbody>
</table>

### 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.

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

* 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

<table>
<thead>
<tr>
<th>F (fast)</th>
<th>M (moderate)</th>
<th>S (slow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>Inhalation</td>
<td>Ingestion</td>
</tr>
<tr>
<td>5.8E-10</td>
<td>6.8E-12</td>
<td></td>
</tr>
<tr>
<td>Maximum release Concentration (as on current form)</td>
<td>Atmosphere (Bq/m³) 5E+00</td>
<td>Sewer Bq/L) 9E+00</td>
</tr>
<tr>
<td>Exemption Toxicity 3.7 E+4 Bq</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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