**Radiation:**

**Decay mode:** Beta

<table>
<thead>
<tr>
<th>Major Betas</th>
<th>Major Gammas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max E (MeV)</td>
<td>Avg E (MeV)</td>
</tr>
<tr>
<td>0.212</td>
<td>0.056</td>
</tr>
<tr>
<td>0.459</td>
<td>0.156</td>
</tr>
<tr>
<td>0.860</td>
<td>0.319</td>
</tr>
</tbody>
</table>

Max. Beta Range in air: 340 cm or 11.15 ft
Max. Beta Range in water: 0.36 cm

Avg. gamma E = 0.676 MeV

**Half – life:** 21.0 hours or 0.9 days

**Gamma constant:** 9.76 mR/hr per 1 mCi at 30 cm

**Radiological data:**

**Min. Ingestion ALI:** 700 µCi equals 5 rem TEDE (Whole Body)

**Min. Inhalation ALI:** 1000 µCi equals 5 rem TEDE (Whole Body)

**Doses:**

**Skin Dose:** Reported for 1 µCi over 10 cm² of skin 36.0 mrad/hr (gamma dose)

**Point Source:** 508 mrad/hr (beta dose)

**Disk Source:** 511 mrad/hr (beta dose)

**Shielding data:**

Max. range for beta:
- Plastic = 0.36 cm
- Aluminum = 0.17 cm

Tenth Value Thickness for average gamma:
- Concrete = 13 cm
- Lead = 1.8 cm

**Detection Information:**

Usable Detectors listed with estimated efficiencies
(Use efficiencies listed on instrument when available)

- Ludlum 3 with pancake probe at 1 cm: 9 % Liq. Scint. Counter: 85 %
- Ludlum 3 with NaI probe near surface: 5 % Gamma Counter: 70 %

**Action Quantities:**

- Bench top quantity must be less than 7000 µCi
- Containers require labeling when greater than 100 µCi
- Rooms require posting when there is greater than 1000 µCi
- Contamination lasting more than 24 hrs require NRC notification when greater than 3500 µCi

Updated – 08/02/2005