Contamination monitoring must be conducted weekly where radioisotopes have been used during the previous seven calendar days. Wipe testing is required when monitoring for hydrogen-3, carbon-14, or sulphur-35. Otherwise, an appropriate survey meter may be used.

A plan of the laboratory must be initially be drawn and referencing radioisotope use areas. Updating of laboratory plans is required when use locations have changed.

Formula: \( \text{Bq/cm}^2 = \frac{\text{Cpm} \times 88 \times 60 \times X}{A} \) (Please see Appendix A on reverse side for instructions).

Please fill out the below table as sample calculation.

### 2. Using a Survey Meter

<table>
<thead>
<tr>
<th>Class</th>
<th>Radionuclide</th>
<th>Isotope</th>
<th>CNSE Limits (Bq/cm²)</th>
<th>% Efficiency</th>
<th>cpm</th>
<th>Make</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For all Classes is 0.3 Bq/cm²

### 3. Using a Wipe Test

<table>
<thead>
<tr>
<th>Date (m/y)</th>
<th>Method of Monitoring</th>
<th>Survey Meter</th>
<th>Wipe Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>BACK GROUND</td>
<td>AREA 1 (Bq/cm²)</td>
<td>AREA 2 (Bq/cm²)</td>
</tr>
<tr>
<td>Week 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### POST-DECONTAMINATION RESULTS

| Week 1     |          |            |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| Week 2     |          |            |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| Week 3     |          |            |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| Week 4     |          |            |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
Appendix A: 3 easy steps to convert counts per minute (CPM) to Becquerel per centimeter squared (Bq/cm²)

Step 1: Determine the Radionuclide Class
The CNSC has grouped radionuclides into 3 classes. The 3 classes are shown below:

Class A Radionuclide: are long-lived or emit alpha radiation
- Co-60
- Sr-90

Class B Radionuclide: are long-lived or emit beta or gamma radiation
- Rb-86
- I-131
- Cs-137

Class C Radionuclide: are short-lived and emit beta or gamma radiation
- C-14
- H-3
- P-32
- Co-60
- Ni-57
- S-35
- I-125
- I-131
- P-33
- Cl-36

Step 2: Determine the regulatory limit
Each of these has limits assigned in terms of unfixed contamination in either a radioactive use or storage area, or in an area where radioactive material is used.

<table>
<thead>
<tr>
<th>Non-Fixed Contamination</th>
<th>Class A radionuclide</th>
<th>Class B radionuclide</th>
<th>Class C radionuclide</th>
</tr>
</thead>
<tbody>
<tr>
<td>in all areas, rooms or enclosures where unsealed nuclear substances are used, or stored</td>
<td>5 Bq/cm²</td>
<td>50 Bq/cm²</td>
<td>500 Bq/cm²</td>
</tr>
<tr>
<td>in all other areas and packaging prior to disposal</td>
<td>0.2 Bq/cm²</td>
<td>0.5 Bq/cm²</td>
<td>5 Bq/cm²</td>
</tr>
</tbody>
</table>

Step 3: Convert CPM to Bq/cm²
The readings from contamination meters and non-portable instruments are related to regulatory criteria if the efficiency of the instrument for a specific radioisotope is known. Instrument efficiencies for specific radioisotopes can be obtained from the manufacturer or determined using an appropriate standard of known activity.

How is ‘Becquerel per centimeter squared’ calculated when using a Liquid Scintillation Counter?

For wipe testing (Liquid Scintillation and Gamma Counters)

\[
\text{Bq/cm}^2 = \frac{(\text{Cpm} - \text{Bkg}) \times (\text{Ew} \times 60 \times \text{A})}{\text{Bkg}}
\]

where \(\text{Cpm} = \) counts per minute for the wipe,
\(\text{Bkg} = \) counts per minute of the background (assume 40 cpm)
\(\text{Ew} = \) scintillation counter efficiency [link to website]
\(\text{A} = \) area wiped in cm².

How is ‘Becquerel per centimeter squared’ calculated when from CPM when using a survey meter?

Calculating Contamination Level For Survey Meters:

\[
\text{Bq/cm}^2 = \frac{(\text{Cpm} - \text{Bkg}) \times (\text{Ew} \times 60 \times \text{A})}{\text{Bkg}}
\]

where \(\text{Cpm} = \) counts per minute for the wipe,
\(\text{Bkg} = \) counts per minute of the background (assume 30 cpm)
\(\text{Ew} = \) GM efficiency (please refer to user manual) and
\(\text{A} = \) area wiped in cm² (19.6 cm² for a pancake probe).