Table 1: Typical Doses for Adults from Dental and other common X-ray Examinations

<table>
<thead>
<tr>
<th>Examination</th>
<th>Effective Dose (mSv)</th>
<th>Equivalent Average Natural Background Radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bitewing dental X-ray</td>
<td>0.005</td>
<td>1 day</td>
</tr>
<tr>
<td>Panoramic X-ray (&quot;OPG&quot;)</td>
<td>0.01</td>
<td>2 days</td>
</tr>
<tr>
<td>Lateral Cephalogram</td>
<td>0.01</td>
<td>2 days</td>
</tr>
<tr>
<td>Cone Beam CT scan</td>
<td>0.5</td>
<td>2.5 months</td>
</tr>
<tr>
<td>Lumbar Spine X-ray</td>
<td>0.7</td>
<td>4 months</td>
</tr>
<tr>
<td>CT Brain Scan</td>
<td>2</td>
<td>1 year</td>
</tr>
<tr>
<td>CT Body Scan</td>
<td>21</td>
<td>8 years</td>
</tr>
</tbody>
</table>

FURTHER INFORMATION

We hope you find this information useful. If you would like any additional information or have any concerns, ask to speak to the Radiation Protection Supervisor for the practice.

Alternatively, you may contact the Radiation Protection Adviser at Dent RPA Ltd by email: RPA@dentrpa.com

This leaflet was produced by:

Dent RPA Ltd

www.dentrpa.com
**BENEFIT VERSUS RISK**

Dental X-ray examinations are “prescribed” by the referring dentist in much the same way that pharmaceutical drugs and medicines are prescribed. The “prescribing” of dental X-ray examinations is therefore based on clinical need. The dentist who requests the X-ray does so on the principle that the benefit of having the X-ray examination outweighs the risk of not having that examination. Dental X-ray examinations are therefore only performed when absolutely necessary.

**X-RAY EQUIPMENT AND ITS SAFETY**

There are a number of different types of dental X-ray equipment. All types use X-rays that pass through the mouth to form an image on film or digital media. The radiation dose received in dental exams is usually very small compared to other types of X-ray examination.

X-ray technology is constantly being improved and updated. Equipment has become more sensitive over recent years and this ensures that radiation doses to the patient are kept to the minimum necessary to achieve a diagnostic result.

*The dental X-ray equipment in this practice is subject to regular, independent safety tests by an independent Radiation Protection Adviser. It is maintained regularly by the manufacturer and the staff undertake their own programme of quality control. All these steps are national requirements in the interests of patient and staff safety.*

**RADIATION DOSE**

When X-rays are taken, some of the energy in the X-ray beam is absorbed in the body. This is called the radiation dose, often shortened to ‘dose’. It can be expressed in a number of different ways. The most common quantity is the ‘effective dose’ measured in Sievert (Sv). Because diagnostic X-ray examinations involve relatively low doses, these doses are stated in milliSievert (mSv); in other words, one thousandth of a Sievert.

**LEGISLATION AND NATIONAL STANDARDS**

The use of X-rays in dental practices is subject to strict legal requirements and national standards. The dental practice must take steps to ensure the radiation dose is kept to a minimum. The doses are regularly checked and audited against national and local reference levels.

**DOSES AND RISK**

The dose received from a typical intra-oral dental X-ray examination is 0.01mSv and is identified as a very low dose procedure compared to other X-ray examinations. The risk of developing cancer as a result of a dental X-ray is typically much less than 1 in 1,000,000. This risk is considered negligible considering the natural risk of the disease from all causes is around 1 in 3 in the UK. Please see table 1 overleaf for further details of the doses from a range of dental and other X-rays with their associated risk.

**PROTECTIVE CLOTHING**

*There is no justification for the routine use of lead aprons or thyroid collars for patients undergoing dental X-rays. Lead aprons do not usually protect the patient from against radiation scattered internally within the body and may slightly increase the dose from a dental X-ray procedure. The use of a lead apron can only be regarded as prudent for a pregnant female (or potentially pregnant) where the beam is directed towards her abdomen. Thyroid collars can cause artefacts and may cause the X-ray to be repeated.*

**NATURAL BACKGROUND RADIATION**

Background radiation comes from the sun, the food we eat, building materials and natural surroundings like earth and rocks.

The dose varies in different parts of the United Kingdom but on average it amounts to an effective dose of about 2.5mSv per year, but varies. For example, background radiation dose in London is also about 2mSv per year, whereas in Cornwall, the background radiation dose is about 7mSv per year on average. It could therefore be argued that a patient who undergoes a relatively complex examination, such as a cone beam CT scan, receives a radiation dose equivalent to the extra dose they would receive if they lived in Cornwall for one month.

*A typical dental X-ray would involve a dose of radiation equivalent to just two days of natural background radiation, or less!*