

Q.A. Collectible

*Sponsored by CRCPD's Committee on Quality Assurance
In Diagnostic X-Ray (H-7)*

Stray Radiation from Dental Panoramic X-Ray Systems

In evaluating exposure of an operator of a dental panoramic x-ray system (or exposure of other nearby office personnel such as the receptionist), one can use a scattering phantom (such as a plastic water jug) in the head holder and measure stray radiation with an appropriate survey instrument. Another option is to wait until a patient undergoes a routine panoramic examination and measure stray radiation at that time.

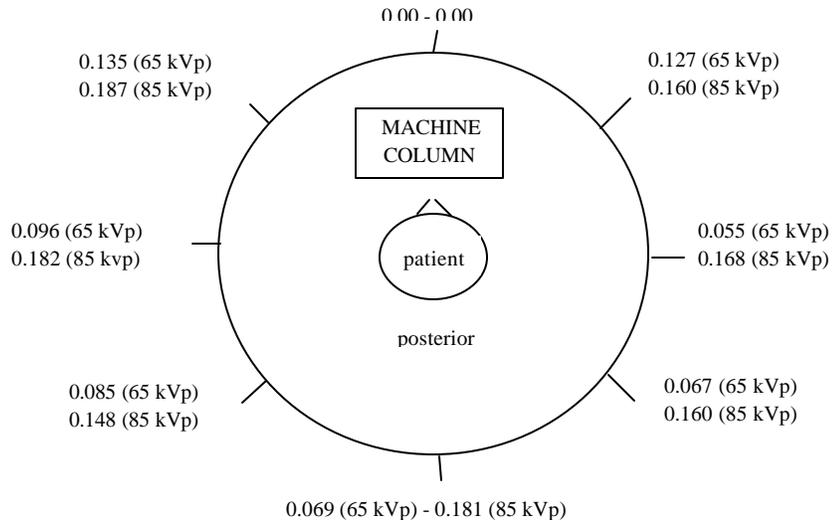
In lieu of the above, a standard "isodose" diagram could be used, and based on workload, a reasonably accurate exposure level at any desired position could be obtained. In 1977, the FDA published a document entitled *Comparison of Radiation Exposures from Panoramic Dental X-Ray Units* (HEW Publication 77-8009.) The Q.A. Committee felt that the information in this document is still of value; we extracted the three stray radiation diagrams from it, and placed them at the end of the text. The stray radiation values are expressed as ranges, for a low and a high kVp technique. Beam configuration, mA, kVp, position of the machine column, shielding effect of the moving cassette carrier, use of different film-screen systems (and thus different technique settings), and other factors will also influence the intensity of stray radiation.

To determine the amount of stray radiation:

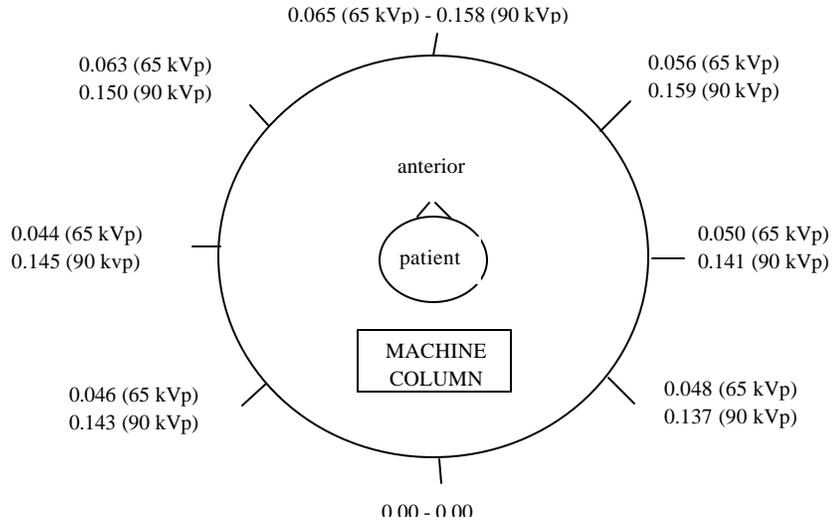
- ?? Select the diagram that most closely resembles the panoramic system you are surveying;
- ?? Ascertain how many panoramic exams are done during a specific time period (e.g., weekly); and
- ?? Multiply that number times the value shown on this "isodose curve." (Since the values on the diagrams are given at 1 meter away from the head, values at different distances will have to be calculated by using the inverse square law.)

The information contained herein is for guidance. The implementation and use of the information and recommendations are at the discretion of the user. The mention of commercial products, their sources, or their use in connection with material reported herein is not to be construed as either an actual or implied endorsement by CRCPD.

Orthopantomograph
stray radiation
measurements (average
mR per exposure cycle
at one meter):



Panorex stray radiation
measurements
(average mR per
exposure cycle at one
meter):



Panelipse stray
radiation
measurements
(average mR per
exposure cycle at one
meter):

