

### **Calibration Intercomparisons of an HDR source in rate and integrate modes.**

Traditionally, a special jig had been used to measure the activity of the HDR  $^{192}\text{Ir}$  source. The source cable is sent inside a bronchial type catheter and is positioned exactly opposite to a thimble chamber. Uncertainties due to the determination of an exact distance between source and detector are minimized by performing measurements on either side of the source. This method, known as the inverse square method, suffers from uncertainties in the room scatter and detector geometry correction factors. It is also quite more involved in setting up and collection of data. A simplification over the above method is the use of a specially calibrated well chamber. We present in this work calibration intercomparisons between the inverse-square and well chamber approaches. The first method is performed with the electrometer in the charge mode whereas the second method is carried out with the electrometer in the current mode. We have been using a third method which combines the advantages of the well chamber (in terms of ease of setup) and electrometer charge mode (in terms of more easily obtainable electrometer calibration factors). This third method, in addition to yielding activity information, it also verifies the linearity of the HDR console setup time. Information about transit time is also obtainable through linear regression of the data points. Agreement among all methods is within 1% and advantages of the third method are further presented.