

## Measurement of the effective dose in Hendala employing Thermoluminescent Dosimeters (TLD)

Deposits of naturally occurring radioactive minerals occur along the South-West, West and East Coasts of Sri Lanka and radiation levels as high as  $5.0 \mu\text{Sv h}^{-1}$  has been recorded. The enhanced radiation levels are due to monazite which contains thorium - 232. The objective of the present study was to evaluate the external effective dose with Thermoluminescent Dosimeters (TLD) in such an area.  $\text{LiF (Tl)}$  TLD cards were pasted on walls at 1m above ground level in seven houses along a 700m stretch near the beach at for 119 and 34 days respectively during Aug 1998 - Jan 1999. The radiation dose measured in this area with a survey meter was on an average  $5.0 \text{ (Sv/ h)}$ . The sensitivity and linearity of the TLDs was determined by an absorbed dose response study. TLD cards were annealed at  $300^\circ \text{C}$  and read with a Harshaw 2271 TD detector. The reading charge signals were corrected to obtain the calibration factor. To obtain the dose response the TLDs were exposed to 0.2 - 10.0 mSv at the SSDL laboratory, Maharagama Cancer Hospital.

The effective dose rates measured in these houses ranged from 5.0-6.0 mSv/ y with an average of 5.4 mSv/ y. A resident who wore a TLD recorded having received an annual dose of 5.457 mSv. The annual effective dose received externally from terrestrial radionuclides in normal background areas is 0.46 mSv. The high concentrations of Thorium present in this area can give rise to the measured higher external doses.

Natural radiation areas are defined as fall below or equal to two times the average global annual effective dose from all natural source, and are  $<5 \text{ mSv/ y}$ . as results in this study are only limited to external exposure from terrestrial radionuclides this area would be categorized as a medium level natural radiation area.