

Calibration of extremity  
dosimeters for Tc-99m, Cs-137  
and X-ray

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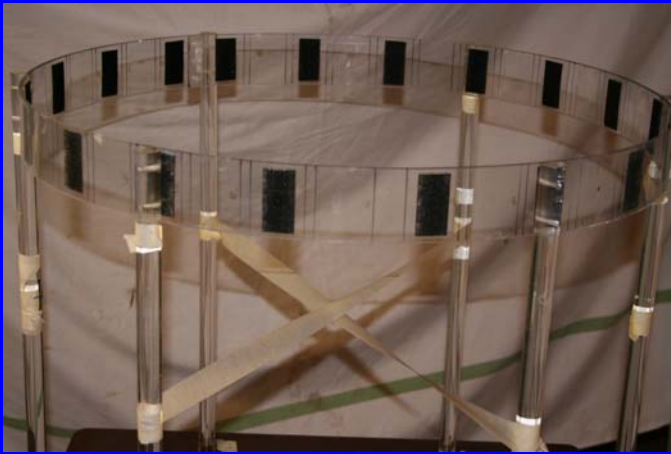
# Introduction

- Extremity TLD
- Finger dose
- $H'(0.07)$  in mSv
- Calibration on phantom as per ISO <sup>(1)</sup>
- Perspex rod 300 mm, 19mm diameter
- Air Kerma rate determined
- Published conversion to  $H'(0.7)$  <sup>(2)</sup>
- Basis for a UK inter-comparison

**1 Bohm et al, Rad Prot Dosim (1999)**

**2 Grosswendt B, Rad Prot Dosim (1995)**

# Irradiation Cs-137 and Tc-99m



- Circular jig
- 6 Perspex finger rods at 30cm
- Low scatter source support
- Cs-137: sealed source 3.7GBq
- Cs-137: 30-120 minutes
- Cs-137: 3mm paper build up
- Tc-99m: solution 5ml 0.5GBq
- Tc-99m: overnight
- Manual timing



# Irradiation 80kVp ISO X-Rays



- Clinical Darpac 2000
- 80kVp nominal 5mA
- Extra collimation:
- Extra filtration: 0.5mmCu 1mmAl
- ISO 4037 Broad series
- 1<sup>st</sup> HVL 0.35mmCu
- 2<sup>nd</sup> HVL 0.51mmCu
- Primary beam at 45 degrees
- Radiographic alignment
- Perspex finger rod at 1m

# In conclusion...

- Has been used for most common types of extremity TLD
- Follows recommended calibration on finger dosimeters