

# Assessing dose from CT Scan Projection Radiographs using a PDC device

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# SPR dose

- Although considered to contribute only a small fraction of the total dose from a CT examination, it may sometimes be necessary to assess that contribution.
  - Leg length studies may only use a scanogram
  - An incident may occur early in the scan

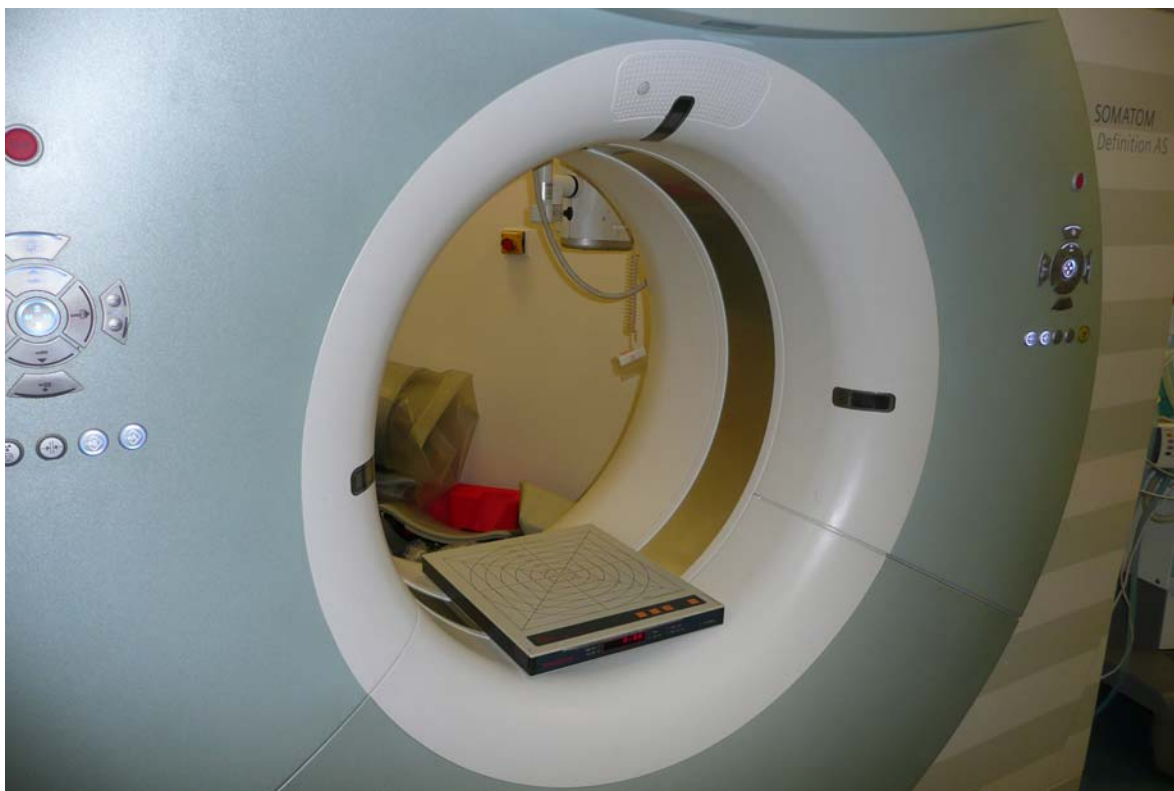


# Methodology

- Patient Dose Calibrator (PDC, Radcal) used.
- PDC placed onto the CT gantry to measure a dose-area product for the scan.
- Effective dose can then be estimated using standard techniques, e.g. PCXMC.



# Set-up



- Measurements made with varying
  - mA
  - Length
  - kV



# Beam Size



- Assessed with Gafchromic film
- On PDC surface
- On gantry
- Just about within the detection area of PDC – for this scanner at least...



# Results

- Readings linear with mA and scan length
- Little difference with scan protocol selected

Scanner	min mA	mGy.cm <sup>2</sup> / mA / mm			
		80 kV	100 kV	120 kV	140 kV
Siemens Def AS 64	20	0.009	0.019	0.034	--
Siemens Sens 16	40	0.005	0.010	0.017	0.024
GE Lightspeed 16	10	0.017	0.032	0.054	0.073
GE VCT 64	10	0.018	0.034	0.054	--



# Estimated effective dose

- PCXMC software
- Modelled using manufacturer data for FID and total filtration
  - **Siemens Definition AS 64**
  - Focus-isocentre distance 60 cm
  - Total filtration 6.8 mm Al
  - Focus-skin distance 50 cm, estimated
  - Default scan factors 120 kV, 35 mA

Region	Length (mm)	AP (mSv)	PA (mSv)
Chest	256	0.07	0.04
Abdo-Pelvis	512	0.1	0.06

*Med. Phys. 40, (8) 084301-1*

*0.3 - 0.4*

*0.2*

*Siemens Definition Flash*



The Christie

## Work to do.....

- Philips and Toshiba scanners
- Measure HVL/filtration
- More simulations

