



FIVE YEARS OF PERSONAL DOSIMETRY USING TL DOSEMETERS IN GREECE (2001-2005)

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INTRODUCTION

The aim of the study: To present and analyse the annual dose information in the 5 year period of 2001-2005 in Greece

Dosimetry Service: Individual Monitoring System of the Greek Atomic Energy Commission (GAEC).

Accreditation: Measurements of personal whole body and extremity TL dosimeters by the National Accreditation Council according to ISO/IEC/17025 criteria since 2002.

Data recording and archiving: Data are maintained at National Dose Registry Information System (NDRIS) at GAEC

Monitored workers: 10,000 workers from 1,000 establishments

Monitoring Period: Monthly (July-August: 1 month)

Type of the used dosimeter: TL

Place of dosimeter: breast level, above the lead apron.

Examined occupational categories: diagnostic radiology, interventional radiology, nuclear medicine, radiotherapy, industrial radiography, education and others.

DATA ANALYSIS

Some data from the NDRIS are shown in the following table 1.

Year	2001	2002	2003	2004	2005
Number of issued dosimeters	87248	88803	93708	101016	107544
% of non-returned dosimeters	4.39	3.57	3.13	2.25	2.64
Number of monitored workers	8562	8666	9329	9942	10248
Mean dose (MAD)/ worker (mSv)	0.48	0.53	0.45	0.39	0.43
% of workers with dose ≥ 0.1 mSv	23	26	23	23	24
MAD / worker with dose ≥ 0.1 mSv	2.11	2.02	1.93	1.72	1.78
Collective dose (manSv)	4.11	4.59	4.20	3.93	4.41
Estimated lost dose (Sv)	0.22	0.16	0.15	0.09	0.11

Table 1: Data from the NDRIS for the years 2001-2005 (recording level is 0,1 mSv/month).

From the table it is seen:

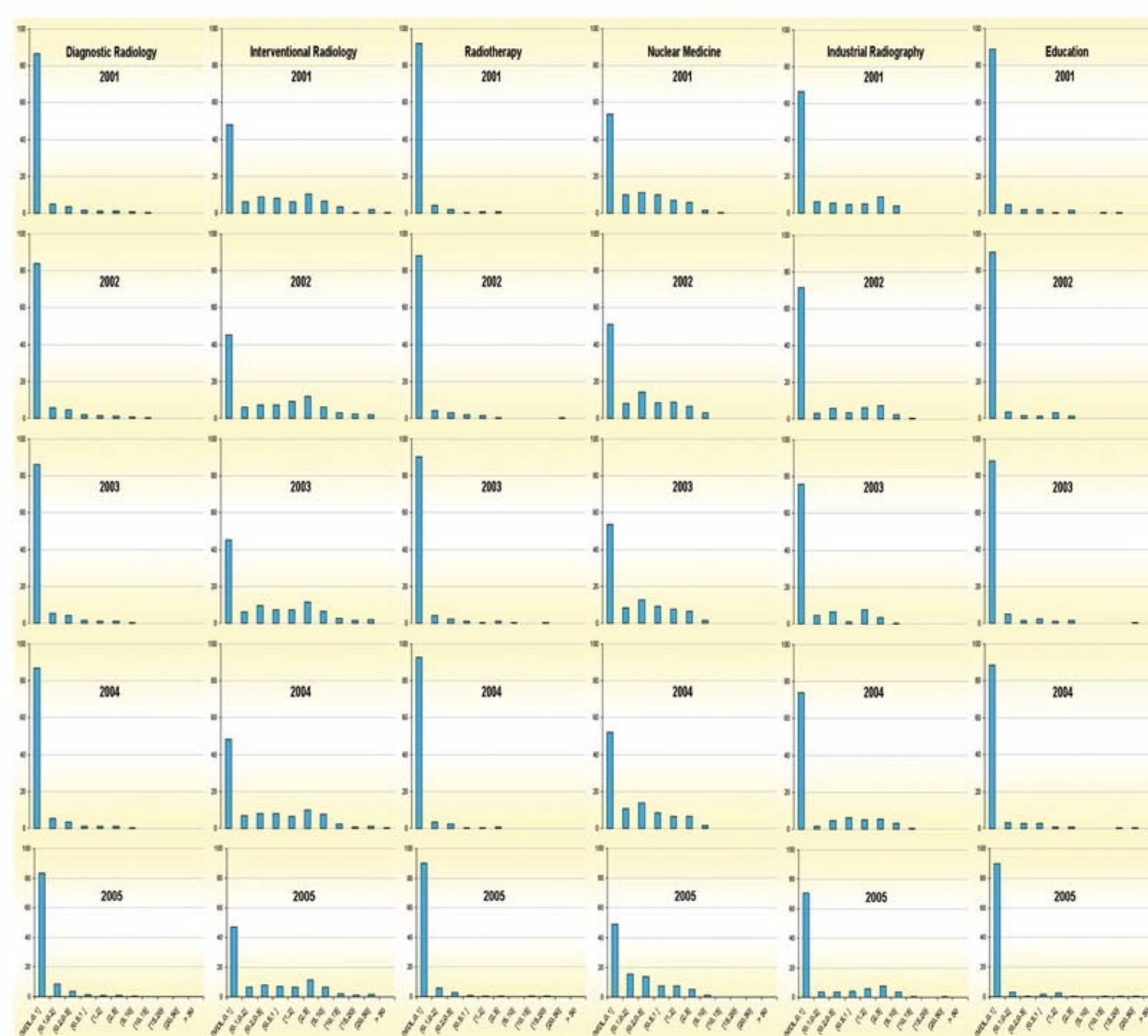
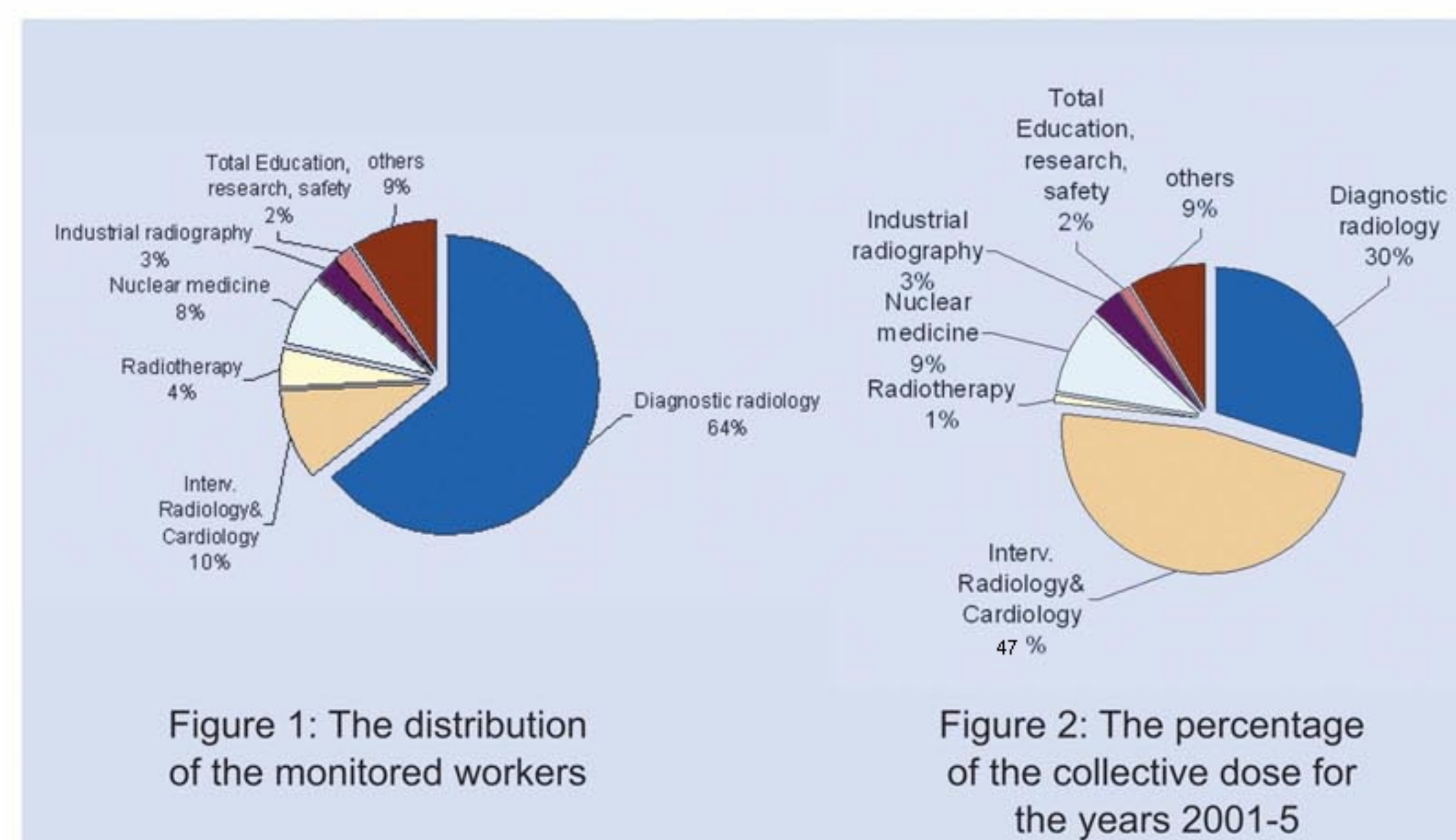
- The number of the monitored workers is increasing, nearly 20% in the last 5 years.
- The collective dose and the MAD per worker remain almost the same, whereas the mean dose per exposed worker presents a small decrease of 15%.
- The percentage of non-returned dosimeters has reached 2.5 %
- The estimated 'lost' dose per year has been reduced to 50%.

Figure 1 represents the distribution of the monitored workers for the year 2005. Figure 2 shows the percentage of the collective dose for the same occupational categories for the years 2001-2005. In figure 3 the percentage of the occupational categories of workers per dose interval is presented.

References

References:

[1] V. Kamenopoulou, G. Drikos and P. Dimitriou, "Occupational exposure to ionising radiation in Greece (1994-1998)", Radiation Protection Dosimetry, Vol. 91, No. 4, pp. 385-389 (2000)



DISCUSSION

The results of the present analysis showed:

- The vast majority of the occupationally exposed workers belongs to the diagnostic radiology sector, but the respective number of doses refers only to the 30% of the collective dose
- The occupational category of the interventional radiology covers the 47% of the collective dose, though the percentage of the monitored workers is only 10%
- The vast majority of the collective dose refers to the interventional radiology and to the diagnostic radiology: the first one is due to the high doses and the second one is due to the high number of monitored workers. The third category in the collective dose is the nuclear medicine.
- A decrease of 25% is observed if we compare the MAD of 2001-2005 with the respective one for the years 1994-1998 [1].
- The reported doses are relatively low; on average 92% of the issued dosimeters receive doses less than the RL.
- The percentage of the workers with a non-zero dose is nearly 23% and it can be considered constant for the last years.
- The annual dose of 20 mSv has been exceeded sometimes by interventional cardiology staff but the estimated effective dose was much lower.
- Incidentally high doses occur in the industrial radiography and the nuclear medicine categories where special investigation is performed driven by the inspectors of GAEC and the radiation protection officers of the institutes concerned.