



Occupational Radiation Exposure in Hong Kong (2010)

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<http://www.dh-rhu.gov.hk>

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This is a report on the occupational external radiation dose data of persons who were employed in work involving radioactive substances or irradiating apparatus in Hong Kong in the year 2010. The data were obtained from individual occupational radiation monitoring using thermoluminescent dosimeters (TLD) provided by the Radiation Monitoring Service (RMS) of the Radiation Health Unit, Department of Health, the Government of the Hong Kong Special Administrative Region.

In 2010, the RMS provided whole body type individual monitoring dosimeters to about 8,934 named persons and 1,333 unnamed users at 844 sites. The named persons could be grouped into about 60 different job types in one of the following four job categories : *dental* (11.65%), *industrial* (10.14%), *medical* (56.56%) and *others* (21.65%). A summary of the dose distribution separately by job category and by job type is at Table 1 and 3 respectively.

The average dose of all the monitored persons was 0.11 mSv, which indicated a slight increase from 0.10 mSv in 2009. All of them (100%) had doses within the statutory limit of 20 mSv in a year. Most of them (83.8%) had doses 0.17 mSv or below in a year, which was the level equivalent to one-tenth the derived statutory dose limit for a month. Three persons received a dose exceeding 6 mSv. Nobody received a whole body dose exceeding 10mSv.

For individual job categories, the average doses for dental, industrial, medical and others were respectively 0.05, 0.10, 0.13 and 0.10 mSv.

Among the monitored persons, about 47.8% worked in the public sector (including staff in hospitals of Hospital Authority), the rest of about 52.2% worked in the private sector. By gender, 4,580 (51.3%) were male and 4,354 (48.7%) were female (Figure 5). The dose distribution by gender is at Table 5.

In 2010, the RMS also provided extremity (finger) dose monitoring service to 178 workers in Hong Kong. The average finger dose was about 5.79 mSv. About 44.4% of the finger dose monitored workers received a dose exceeding 0.17 mSv. Three workers received a finger dose exceeding 100 mSv and the highest dose recorded is 284.48 mSv against the annual limit of 500 mSv prescribed by the Ordinance. A summary of the dose distribution separately by job category and by job type is at Table 2 and 4 respectively.

For individual job categories, the average doses for industrial, medical and others were respectively 3.95, 1.33 and 18.66 mSv. By gender, 132 (74.2%) were male and 46 (25.8%) were female (Figure 6). The dose distribution by gender is at Table 6.

Figure 1
The Distribution of Whole Body Dosimeter Users by Job Categories, 2010

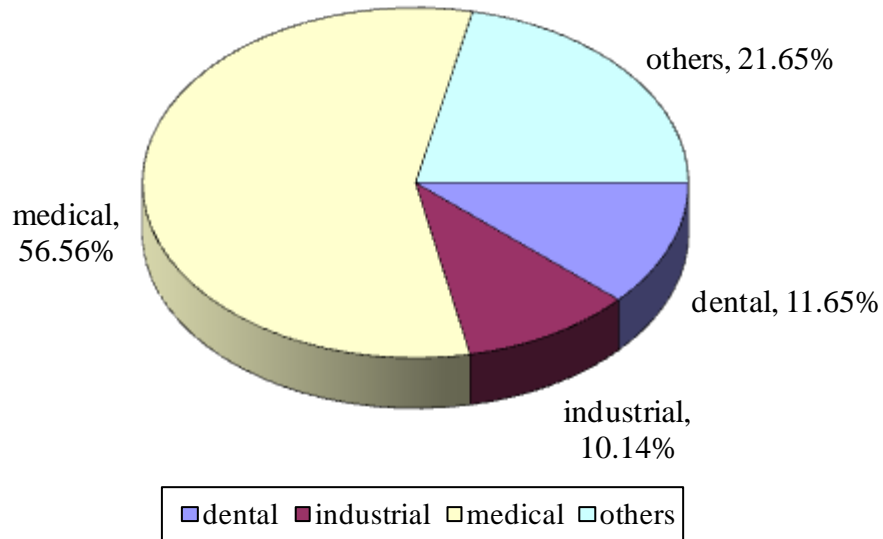


Figure 2
The Distribution of Finger Dosimeter Users by Job Categories, 2010

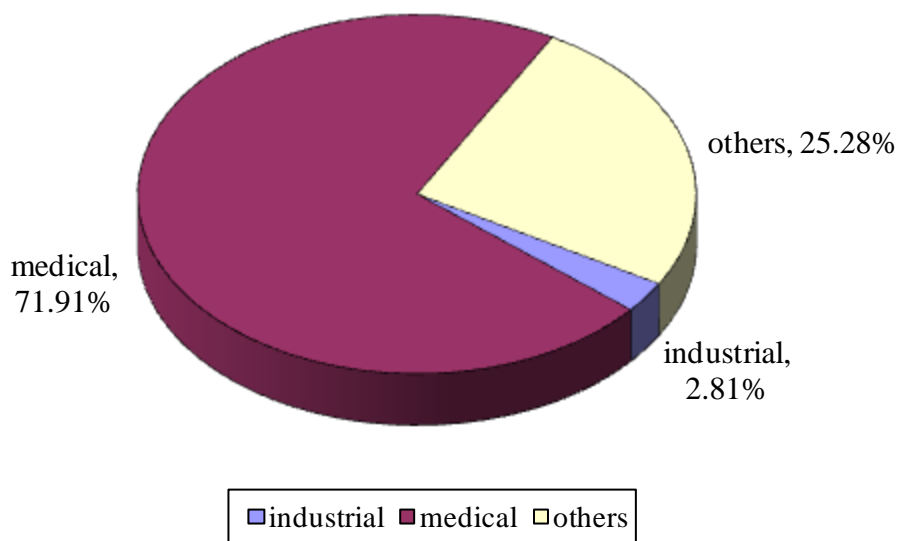


Figure 3
The Average Annual Occupational Whole Body Dose by Job Categories, 2010

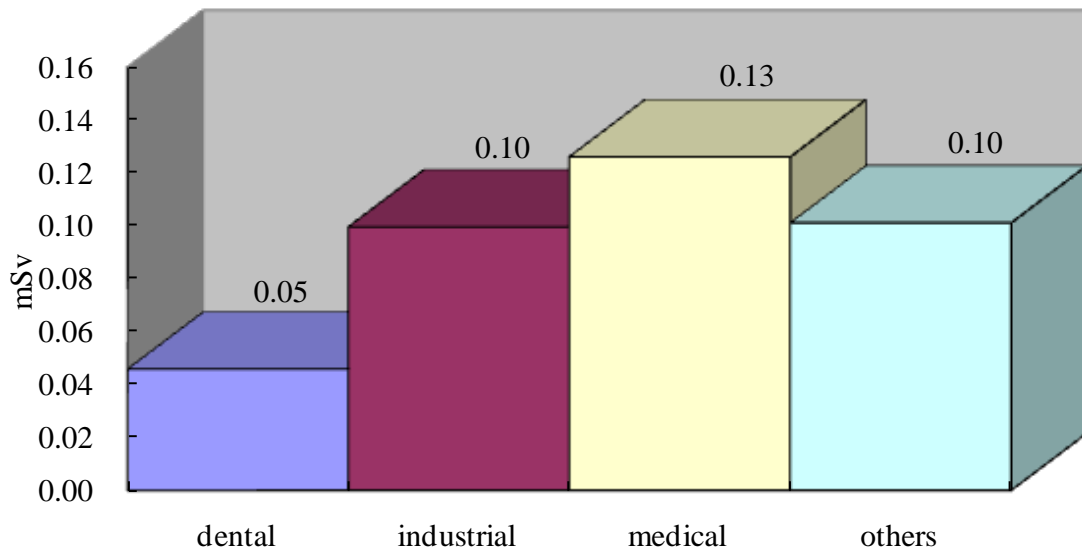


Figure 4
The Average Annual Occupational Finger Dose by Job Categories, 2010

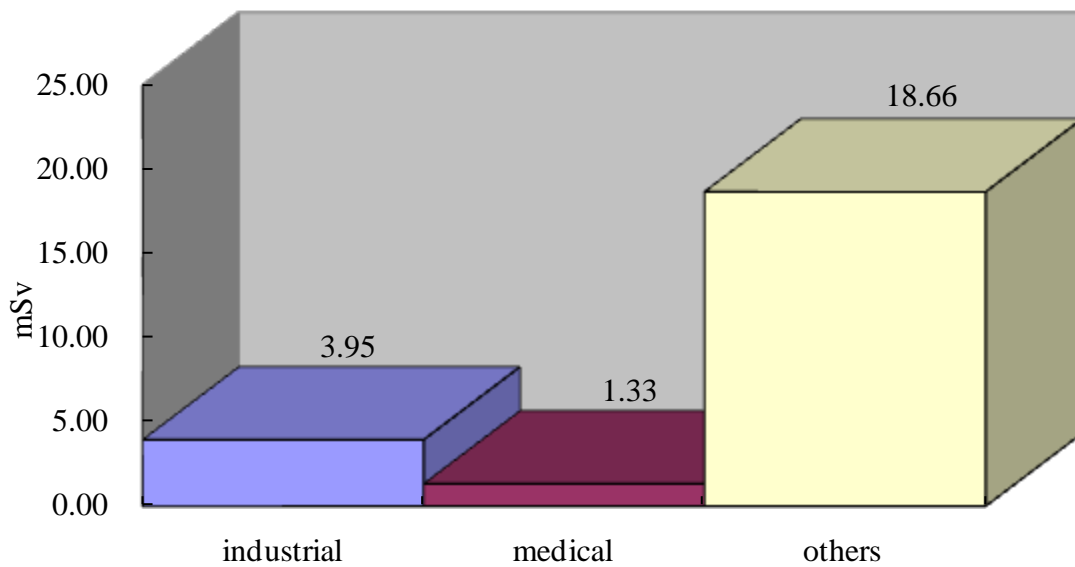


Figure 5

The Distribution of Whole Body Dosimeter Users by Gender, 2010

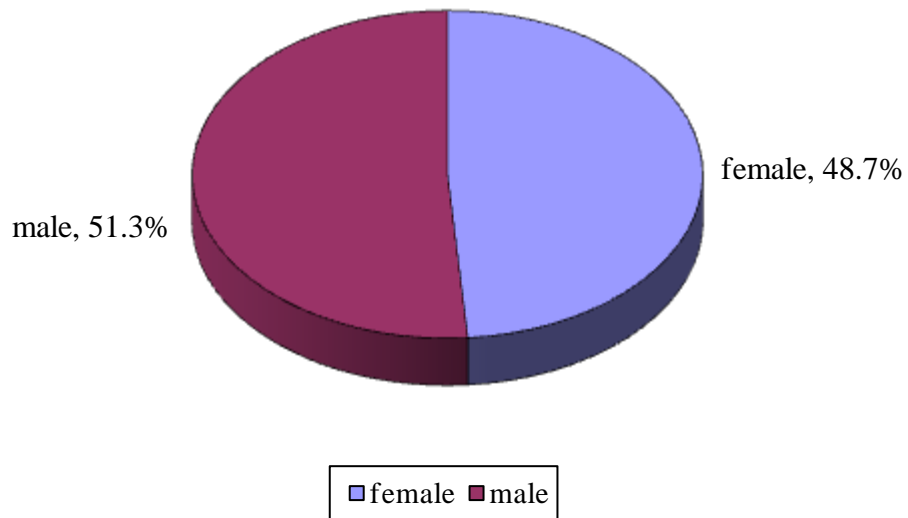


Figure 6

The Distribution of Finger Dosimeter Users by Gender, 2010

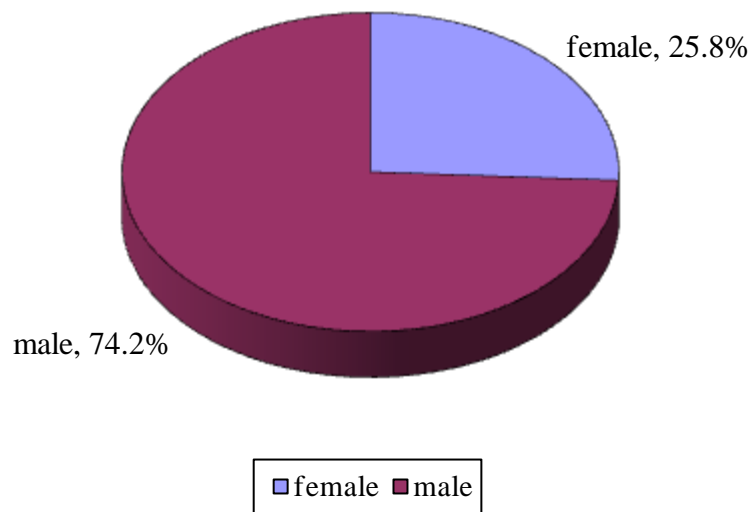


Table 1

**The Distribution of Whole Body Dose
by Job Categories, 2010**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Dental	958	79	4	0	0	0	0
Industrial	765	117	20	4	0	0	0
Medical	4110	772	122	39	9	1	0
Others	1651	247	23	7	4	2	0
Total	7484	1215	169	50	13	3	0

Remark: x represents the dose values in mSv

Table 2

**The Distribution of Finger Dose
by Job Categories, 2010**

	$x \leq 1$	$1 < x \leq 10$	$10 < x \leq 100$	$100 < x \leq 200$	$200 < x \leq 500$	$500 < x$
Industrial	2	2	1	0	0	0
Medical	101	25	2	0	0	0
Others	28	10	4	1	2	0
Total	131	37	7	1	2	0

Remark: x represents the dose values in mSv

Table 3**The Distribution of Whole Body Dose
by Job Types, 2010**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Artisan	92	16	1	0	0	0	0
Administrator	20	5	0	0	0	0	0
Chemist	16	7	1	0	1	0	0
Clerk	53	8	0	0	0	1	0
Consultant (Medical)	40	6	2	0	0	0	0
Delivery	3	2	1	1	1	0	0
Dentist	369	30	1	0	0	0	0
Dental Assistant	350	14	2	0	0	0	0
Dental Hygienist	17	2	0	0	0	0	0
Dental Therapist	222	33	1	0	0	0	0
Department Manager	4	1	0	0	0	0	0
Driver	23	2	1	0	0	0	0
Engineer	132	24	4	1	0	0	0
Experimental Officer	4	0	0	0	0	0	0
Fire Safety Worker	9	3	0	0	0	0	0
Gas Mantle Worker	1	0	0	0	0	0	0
Laboratory Attendant	68	6	2	2	0	0	0

**The Distribution of Whole Body Dose
by Job Types, 2010 (Continued)**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Lecturer	51	1	0	0	0	0	0
Lightning Conductor Worker	1	0	0	0	0	0	0
Luminous Watch Assembly Worker	8	2	0	0	0	0	0
Mechanic	40	5	1	0	0	0	0
Medical Officer	881	189	22	10	2	0	0
Medical Officer (Therapeutic)	54	7	5	0	0	0	0
Medical Technologist	34	6	0	0	0	0	0
Nurse	1266	240	23	4	1	0	0
Nurse (Veterinary)	18	5	0	1	0	0	0
Operator	141	9	0	0	0	0	0
Pharmacist	10	6	1	0	0	0	0
Physicist (Health)	6	5	1	0	0	0	0
Physicist (Medical)	41	14	4	2	0	0	0
Physiotherapist	3	1	0	0	0	0	0
Police	34	2	0	0	0	0	0
Quality Assurance	56	13	1	0	0	0	0
Radiobiologist	3	0	0	0	0	0	0

**The Distribution of Whole Body Dose
by Job Types, 2010 (Continued)**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Radiographer (Diagnostic)	1072	155	48	21	5	1	0
Radiographer (Industrial)	34	14	5	1	0	0	0
Radiographer (Therapeutic)	107	24	6	0	0	0	0
Radiologist	61	15	2	0	0	0	0
Research Assistant	228	22	1	0	0	0	0
Safety Officer	8	0	0	0	0	0	0
Scientific Assistant	12	1	0	0	0	0	0
Scientific Officer	18	2	1	0	0	0	0
Security Officer	1	0	0	0	0	0	0
Speech Therapist	37	4	0	0	0	0	0
Store Keeper	3	1	0	0	0	0	0
Student	290	12	0	0	0	0	0
Teaching Assistant	3	0	0	0	0	0	0
Technician (Electrical)	100	20	5	0	0	0	0
Technician (Laboratory)	353	75	2	0	1	1	0
Technician (X-rays)	89	3	1	0	0	0	0
Technical Officer	83	5	1	0	0	0	0

**The Distribution of Whole Body Dose
by Job Types, 2010 (Continued)**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Trainee	19	4	1	0	0	0	0
Vet	104	25	2	0	1	0	0
Vet Assistant	64	23	0	0	0	0	0
Ward Attendant	190	43	6	1	0	0	0
Ward Manager	3	0	0	0	0	0	0
Workman	92	28	0	0	0	0	0
X-ray Assistant	29	5	0	0	0	0	0
X-ray Crystallographer	2	0	0	0	0	0	0
No Job Code	412	70	14	6	1	0	0
Total	7484	1215	169	50	13	3	0

Remark: x represents the dose values in mSv

Table 4**The Distribution of Finger Dose
by Job Types, 2010**

	$x \leq 1$	$1 < x \leq 10$	$10 < x \leq 100$	$100 < x \leq 200$	$200 < x \leq 500$	$500 < x$
Chemist	2	3	3	0	1	0
Consultant (Medical)	1	0	0	0	0	0
Engineer	0	1	0	0	0	0
Laboratory Attendant	1	1	1	0	0	0
Lecturer	2	0	0	0	0	0
Medical Officer	28	2	0	0	0	0
Medical Officer (Therapeutic)	21	0	0	0	0	0
Medical Technologist	0	0	1	0	0	0
Pharmacist	3	2	1	0	0	0
Physicist (Medical)	3	0	0	0	0	0
Radiographer (Diagnostic)	36	21	0	0	0	0
Radiographer (Therapeutic)	1	0	0	0	0	0
Radiologist	4	0	0	0	0	0
Research Assistant	1	0	0	0	0	0
Scientific Officer	0	2	0	0	0	0
Security Officer	1	0	0	0	0	0
Speech Therapist	3	0	0	0	0	0

**The Distribution of Finger Dose
by Job Types, 2010 (Continued)**

	$x \leq 1$	$1 < x \leq 10$	$10 < x \leq 100$	$100 < x \leq 200$	$200 < x \leq 500$	$500 < x$
Student	1	0	0	0	0	0
Technician (Laboratory)	8	2	0	1	1	0
Technical Officer	1	0	0	0	0	0
Ward Attendant	1	0	0	0	0	0
Workman	1	0	0	0	0	0
No Job Code	12	3	1	0	0	0
Total	131	37	7	1	2	0

Remark: x represents the dose values in mSv

Table 5

**The Distribution of Whole Body Dose
by Gender, 2010**

	$x \leq 0.17$	$0.17 < x \leq 0.75$	$0.75 < x \leq 1.5$	$1.5 < x \leq 3.0$	$3.0 < x \leq 6.0$	$6.0 < x \leq 10$	$10 < x$
Male	3806	632	102	28	11	1	0
Female	3678	583	67	22	2	2	0
Total	7484	1215	169	50	13	3	0

Remark: x represents the dose values in mSv

Table 6

**The Distribution of Finger Dose
by Gender, 2010**

	$x \leq 1$	$1 < x \leq 10$	$10 < x \leq 100$	$100 < x \leq 200$	$200 < x \leq 500$	$500 < x$
Male	96	26	7	1	2	0
Female	35	11	0	0	0	0
Total	131	37	7	1	2	0

Remark: x represents the dose values in mSv