

A MODEL OF STANDARDIZING DOSIMETRIC DATA COLLECTION FOR STATISTICAL ANALYSIS ON OCCUPATIONAL EXPOSURE

M.I. LITIDO¹ and A. TACCONI²

¹ENEA, PAS/FIBI/DOSI, Via Mazzini n.2
40138 Bologna, Italy

²USI 25, Fisica dell'Ambiente, Palazzo della Sanità
37122 Verona, Italy

FOR SOME YEARS A GROUP OF ITALIAN EXPERTS IN PERSONAL DOSIMETRY (EDP) SPONSORED BY THE ITALIAN NUCLEAR ENERGY AGENCY (ENEA) HAS BEEN MEETING TO DISCUSS THE GENERAL PROBLEM OF STANDARDIZING THE METHODOLOGIES USED BY THE SEVERAL ITALIAN DOSIMETRIC SERVICES. ONE OF MAIN OBJECTIVES IS TO ARRIVE AT A NATIONAL DOSIMETRIC DATA BASE. THE DOSIMETRIC RECORD FORMAT PROPOSED TO COLLECT DOSIMETRIC INFORMATION ALL OVER ITALY AND THE INITIAL ANALYSIS DONE ARE BRIEFLY ILLUSTRATED IN THE PAPER.

Introduction

The project of collecting dosimetric data about professionally exposed workers implied the normalization of different file structures. It was really difficult to propose a common method of data collection taking into account the present different organization of the Italian dosimetric services; so the dosimetric record format proposed shows traces of the above problems, because, in fact, it doesn't contain data difficult to obtain at present such as, for instance, the actual job of workers exposed to radiation.

Data stored in 1984 concerning 200,000 dosimetric assessments collected all over Italy have been analyzed; all data are presented in terms of dose equivalent [mSv]. The experimental results show that approximately 90% of the doses received is below the detection threshold depending on the type of the used dosimeter. This confirms once again that in all practical situations the adopted systems of dose limitation in providing protection for workers are largely sufficient.

Dosimetric record format

Dosimetric data have been stored by all services with the same record format as shown in Figure 1: the first line in the Figure is the (positional) number of the item to which we will refer for the next; the third line indicates the field length in bytes.

1	2	3	4	5	6	7	8	9	10	11	12	13
ZIP	USERS CATE- GORY	DOSIMETER TYPE	YEAR	PERIOD	PERSON CODE	DOSE	AVERAGE ENERGY	NOTE	SEX	AGE	MINIMUM VALUE	MAX VALUE
5B	2B	3B	2B	2B	15B	4B	5B	1B	1B	2B	3B	5B

Fig. 1. Dosimetric record format

The record fields are:

1. is the postal code of the town of the observed worker;
2. is the type of work, i.e., industry, medical environment, research, etc.;
3. it specifies the type of the dosimeter used (film badges, TLD dosimeters, etc.), the type of monitored radiation (X, X+gamma, slow neutrons, fast neutrons, etc.) and if the

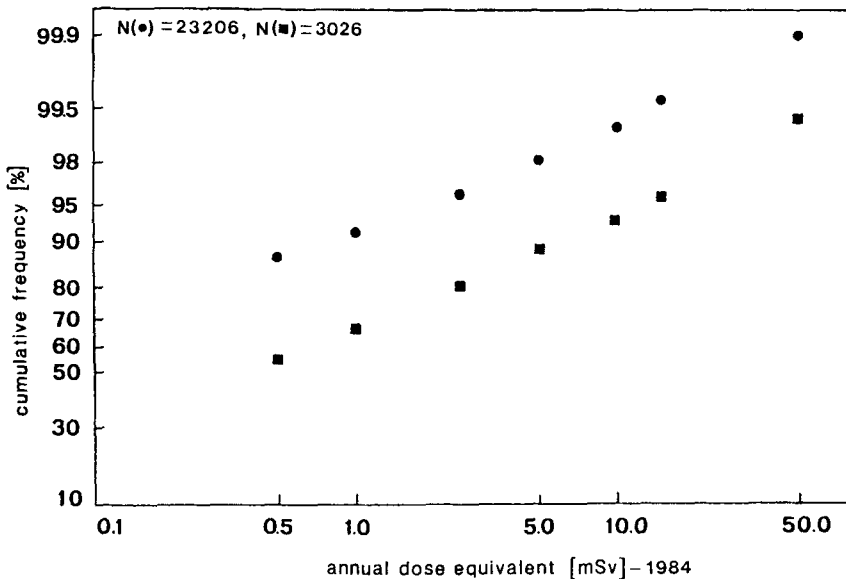


Fig. 2. Log-probability plot of annual dose equivalent [mSv]

- X and gamma-rays, TB, (23206 workers);
- X and gamma-rays, extremities and eyes, (3026 workers)

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