



OCCUPATIONAL RADIATION EXPOSURES IN MEDICINE AND INDUSTRY IN POLAND

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INTRODUCTION

Dosimetry service based on thermoluminescence (TL) dosimetry started its activity at the Institute of Nuclear Physics (IFJ) in Krakow in 1965. The dose measurements were done at that time for 250 IFJ's workers only, using a simple manual device for reading. In 2002 the new Laboratory of Individual and Environmental Dosimetry (LADIS) was formally established at the IFJ and obtained accreditation according to EN-PN-ISO/IEC 17025 standard. Since 2002 the number of workers has been increasing and has reached 37000 all over Poland for total 4400 institutions nowadays. This work presents results of statistical evaluation of more than 470 000 quarterly dose measurements.

MATERIALS, INSTRUMENTATION AND METHODS

TLD types:
MTS-N (LiF:Mg,Ti)
MCP-N (LiF:Mg,Cu,P)



TL dosimeters
DI-02: 4xMTS-N detectors
measured values: Hp(10)
accredited range: 0.1 mSv - 1 Sv
PI-01: 1xMTS-N detectors
Measured values: Hp(0.07)
accredited range: 0.1 mSv - 1 Sv



TLD dosimeter type DI-02 and PI-01

Four automatic RE-2000 and
DOSACUS TL readers (from
Miron Techn. (Rados) Oy



RE- 2000 reader

Accreditation
Certificate



RESULTS

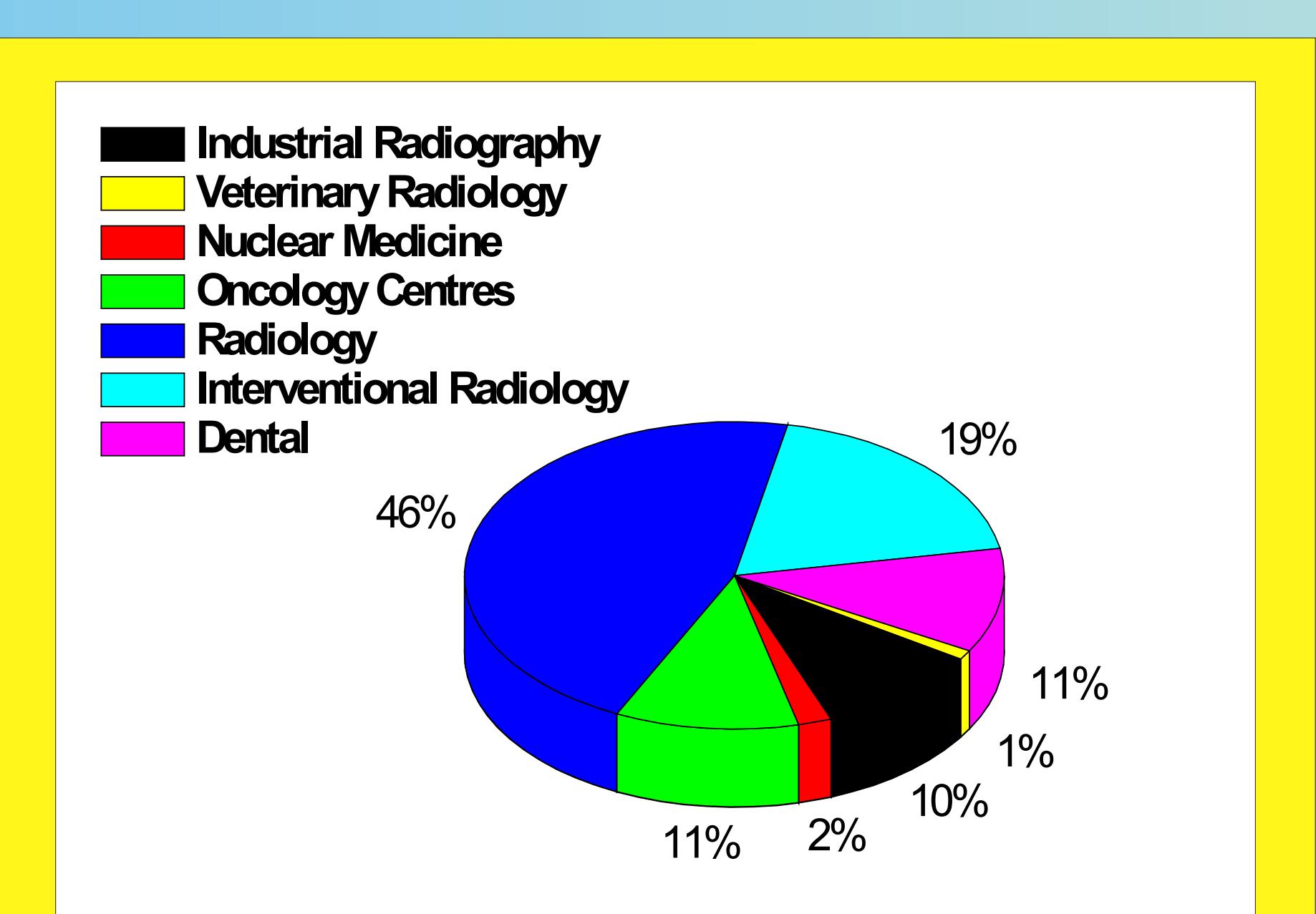


Fig. 1. Different kind of occupational exposure in 2012 in Poland.

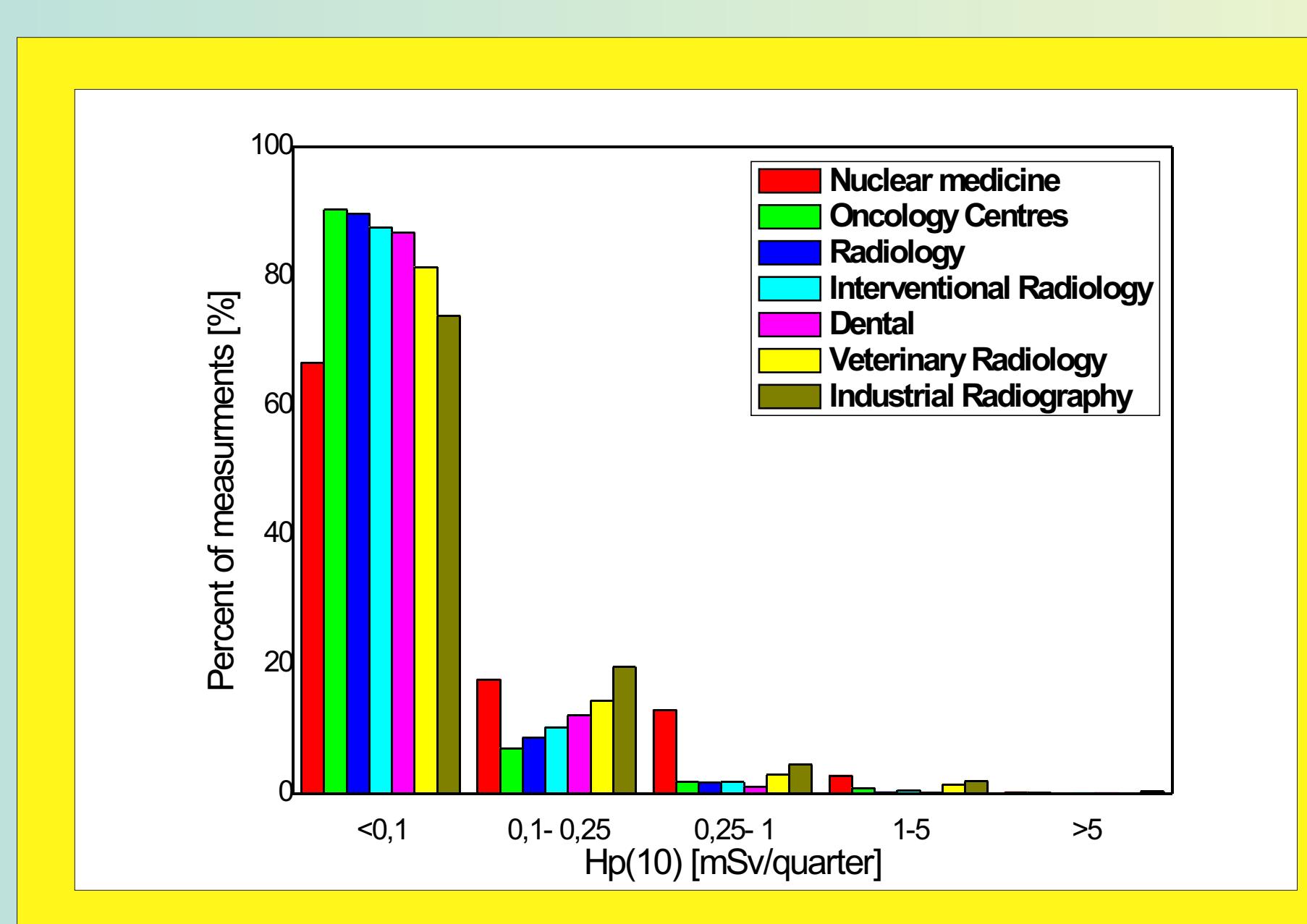


Fig. 2. Percentage of quarterly measurements of photon (gamma, X-rays) Hp(10) using DI-02 individual dosemeters.

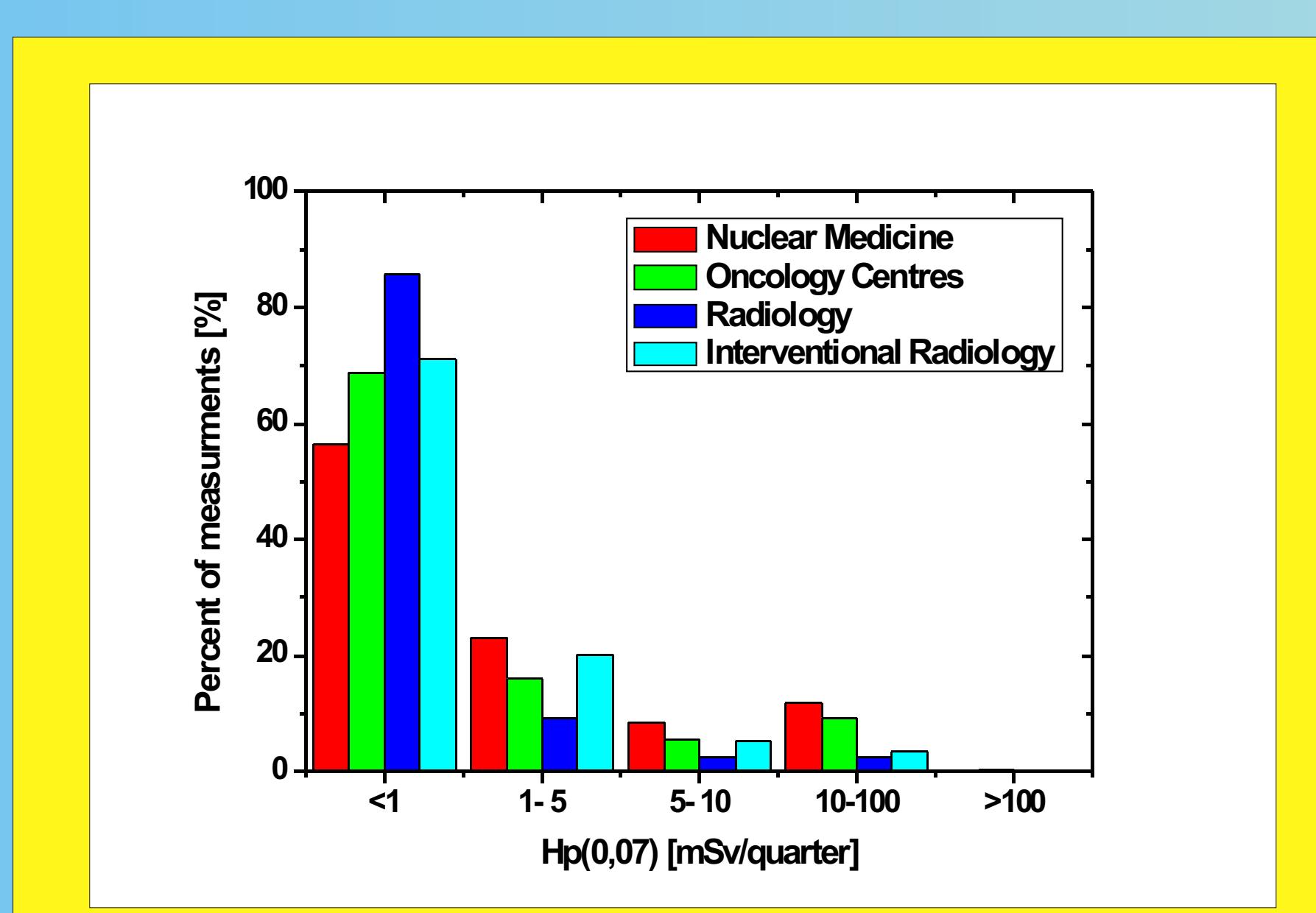


Fig. 3. Percentage of quarterly measurements of photon (gamma, X-rays) Hp(0.07) using PI-01 finger-ring dosimeters.

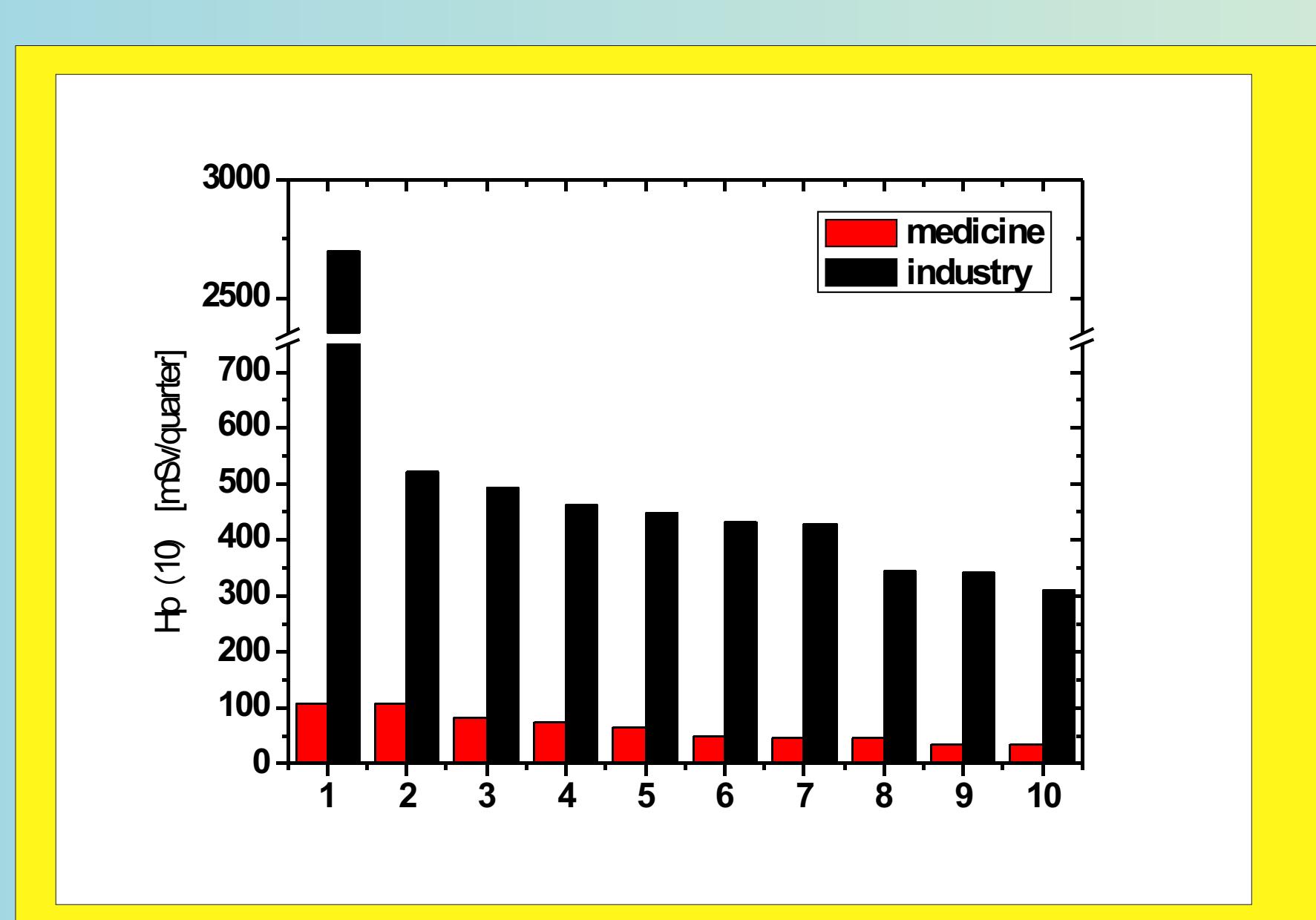
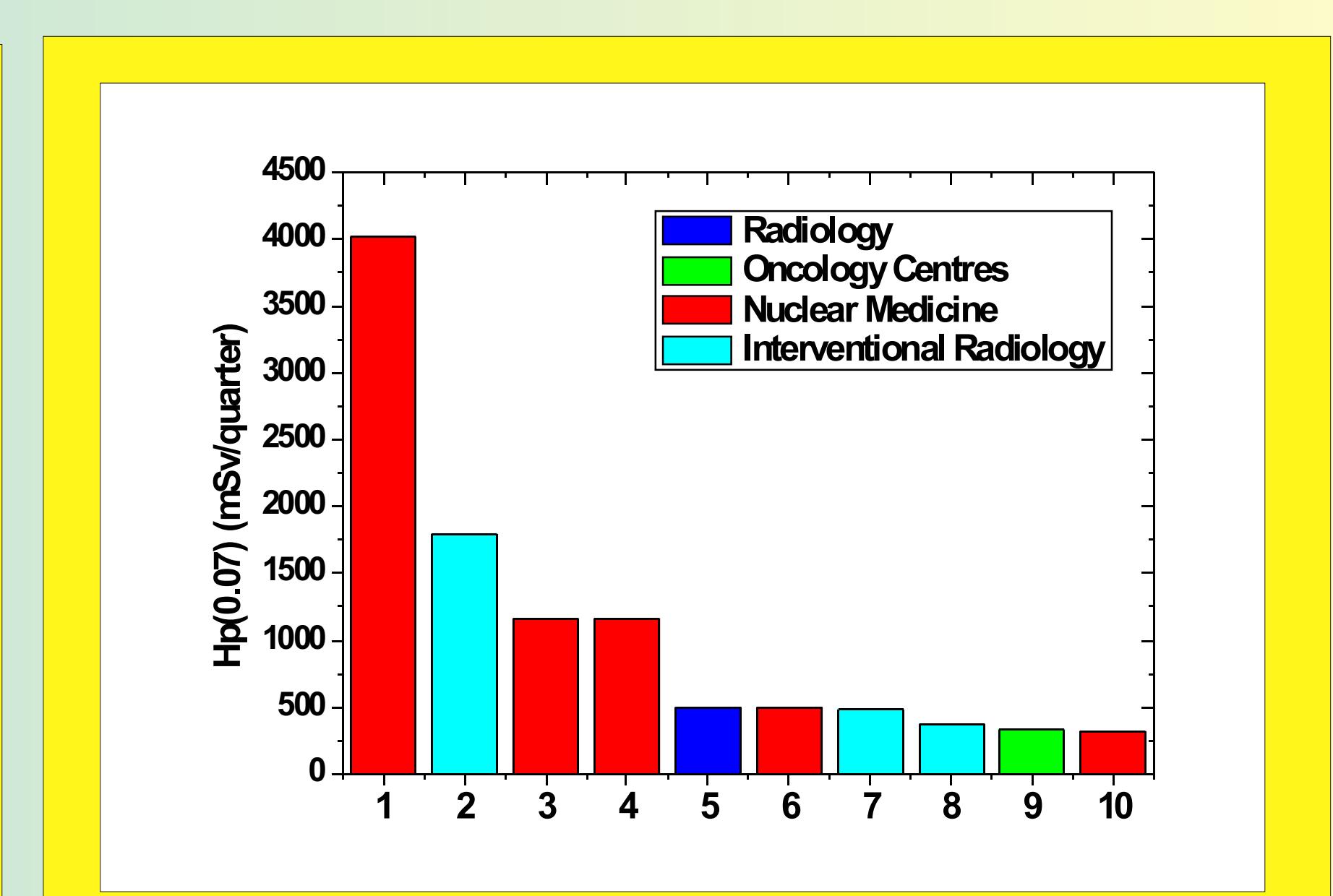


Fig. 4. 10 highest cases of Hp(10) and Hp(0.07) reported .



SUMMARY

- From 65% up to 90% of quarterly Hp(10) recorded doses are below 0.1 mSv, which is on the level of natural environmental doses;
- Dose levels between 0.1 - 5 mSv/quarter are the most frequent in nuclear medicine, veterinary and industrial radiography sectors;
- The highest doses have been registered for industrial applications of gamma and X-rays.