



Eye lens exposure to ionising radiation in personnel of a nuclear medicine department: a preliminary report

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Purpose

The aim of the study was to estimate equivalent doses in the eye lens in employees of the Nuclear Medicine Department of the Pomeranian Medical University (PMU) in Szczecin. The European Directive 2013/59 limited the annual eye lens dose to 20 mSv, which stimulated the need to estimate equivalent doses in clinical laboratories using ionising radiation in diagnostic and therapeutic procedures.

Methods

10 employees (2 doctors, 5 technicians and 3 nurses) used personal eye dosimeters for a total time of 3 months. Dosimeters were supplied by and analysed for their indications by the Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN) in Kraków. Technicians and nurses in the Nuclear Medicine Department PMU prepared radioisotopes for patients in a hot laboratory in a rotation system.

Results

Personnel preparing and administering radiopharmaceuticals with iodine I-131 to patients (2 doctors and 1 technician) received an average equivalent dose of 11.63 μ Sv per GBq of activity. Technicians preparing radiopharmaceuticals labelled with technetium Tc99m were exposed to an equivalent dose of 0.002 μ Sv/GBq. Nurses preparing and administering radiopharmaceuticals labelled with technetium Tc99m were exposed on average to an equivalent dose of 0.006 μ Sv/GBq. Doses registered during 3-month personal eye dosimetry ranged from max. 0.42 mSv to min. 0.20 mSv.

Results

The estimated maximum annual eye lens dose per employee in the NMD department was not higher than 2.5 mSv.

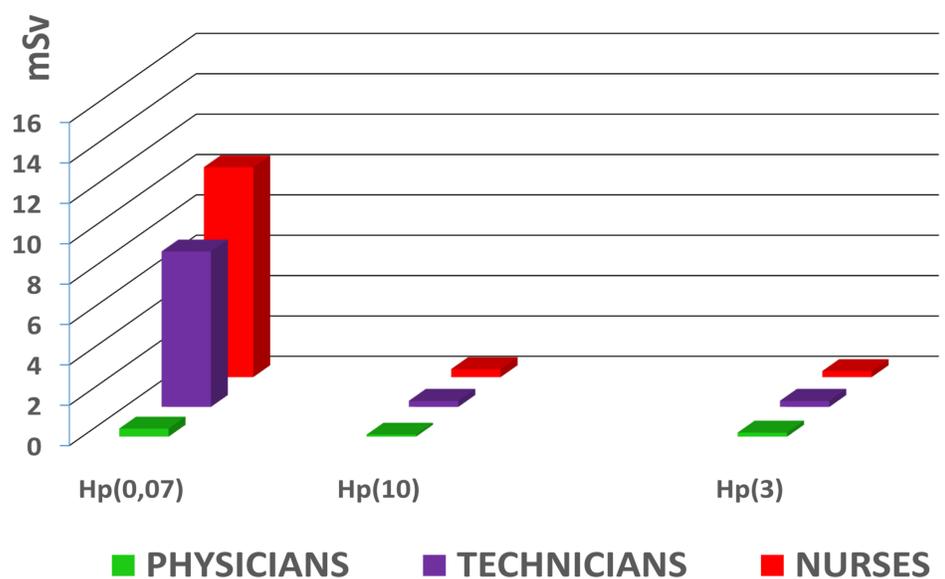


Fig. Comparison of the mean equivalent doses for the lens of the eye, whole body and hands measured over 3 months in the analysed occupational groups: physicians, technicians and nurses.

Figure shows mean equivalent doses for hands (Hp(0.07)), whole body (Hp(10)) and the lens of the eye (Hp(3)) measured over 3 months in the analysed occupational groups.

Conclusions

Personnel of the Nuclear Medicine Department PMU do not require personal eye dose monitoring while performing their routine duties. Personnel preparing and administering radiopharmaceuticals to patients may use leaded eyewear for protection.