

Unofficial translation

REGULATION OF THE COUNCIL OF MINISTERS

of 23 December 2002

on the requirements for dosimetric equipment

(O.J. No 239 Item 2032)

Under Article 28 paragraph 2 of the Act of Parliament of 29 November 2000 - Atomic Law (Polish O.J. of 2001 No 3 Item 18, No 100 Item 1085 and No 154 Item 1800, and of 2002 No 74 Item 676 and No 135 Item 1145) the following regulation is adopted:

§1. Requirements for dosimetric equipment shall be established, and given in Annex to the Regulation.

§2. Regulation shall enter into force on 1 January 2003¹.

ANNEX

REQUIREMENTS FOR DOSIMETRIC EQUIPMENT

I. Requirements for dosimetric equipment used under normal conditions

1. Design, construction and accessories of the dosimetric equipment¹, appropriate for a given ionizing radiation type, shall enable the determination of:

- 1) Individual dose equivalent² – with an individual dosimeter,
- 2) Ambient dose equivalent³ or directional dose equivalent⁴ – with an environmental dosimeter.

2. Individual dosimeter shall enable the estimation of ionizing radiation dose received by the individual carrying the dosimeter.

3. Environmental dosimeter shall enable the estimation of ionizing radiation dose received by an individual other than that referred to in paragraph 2.

¹ This Regulation has been preceded by the order of the President of the National Atomic Energy Agency of 25 January 1988 on the requirements that should be met by dosimetric equipment used in radiological protection, and on requirements for the records of dosimetric measurement results (M.P. No 6 Item 59), which shall be repealed on 31 December 2002 under Article 137 of the Act of Parliament of 29 November 2000 - Atomic Law (Polish O.J. of 2001 No 3 Item 18, No 100 Item 1085 and No 154 Item 1800, and of 2002 No 74 Item 676, and No 135 Item 1145).

4. Measurement range of the individual and environmental dosimeter shall cover at least three orders of magnitude within the intervals referred to in paragraphs 6 and 7.

5. Design, construction and accessories of dosimetric equipment shall enable:

- 1) Its use in the environmental, transport and power supply conditions, consistent with the equipment's designation,
- 2) Easy removal of radioactive contamination from this equipment,
- 3) Its application without exposing the user to electric shocks and excessive temperature.

6. Design, construction and accessories of dosimetric equipment for dose estimation for workers employed in conditions of occupational exposure to ionizing radiation, shall enable the determination of individual, ambient or directional dose equivalent at least in the interval from 0.1 millisievert (mSv) to 1 sievert (Sv), or of the rate of these equivalents at least in the interval from 0.01 millisievert per hour (mSv/h) to 1 sievert per hour (Sv/h).

7. Design, construction and accessories of dosimetric equipment for dose estimation for members of general public shall enable the determination of ambient dose equivalent in the environment at least in the interval from 1 microsievert (μ Sv) to 100 mSv, or of the rate of this equivalent at least in the interval from 0.1 microsievert per hour (μ Sv/h) to 1 mSv/h.

8. Design, construction and accessories of dosimetric equipment used in situation, when the rate of ambient or individual dose equivalent can exceed the level of 1 mSv/h, shall enable the determination of the radiation type, and shall ensure visual or acoustic signalization of exceeding the threshold values for measured quantities, which are given in service manual.

9. Service manual or manufacturer's documentation enclosed with the dosimetric equipment, shall determine the following:

- 1) Radiation type and energy,
- 2) Measured quantities,
- 3) Effective measurement ranges,
- 4) Energy characteristics,
- 5) Measuring error for reference energy,
- 6) Reference point for calibration,
- 7) Environmental conditions ranges for the equipment operation.

10. Calibration of dosimetric equipment shall be performed with at least the following frequency:

- 1) For dosimetric equipment that does not have a control radioactive source – once every 12 months,

- 2) For dosimetric equipment that does have a control radioactive source – once every 24 months.

II. Requirements for dosimetric equipment used in radiation emergency situations

1. Dosimetric equipment shall fulfill requirements established in part I, paragraphs 1-3, 5 and 8-10.

2. Measuring range for individual and environmental dosimeter shall cover at least three orders of magnitude within the intervals referred to in paragraph 3.

3. Design, construction and accessories of dosimetric equipment for dose estimation for workers employed in conditions of occupational exposure to ionizing radiation, and for members of general public, shall enable the determination of individual dose equivalent at least in the interval from 0.1 mSv to 10 Sv, or of the rate of the individual, ambient or directional dose equivalent at least in the interval from 0.1 mSv/h to 5 Sv/h.

Explanations:

- 1 - “Dosimetric equipment” denotes individual dosimeters and environmental dosimeters, designed for estimation of doses (effective and equivalent) resulting from external exposure to ionizing radiation, except for the dosimeters used for measuring radiation applied for medical purposes, referred to in Article 15 of the Act of 29 November 2000 – Atomic Law.
- 2 - “Individual dose equivalent” denotes the dose equivalent in soft tissue, at a given depth d , in a given point under the body’s surface.
- 3 - “Ambient dose equivalent” denotes dose equivalent in a given point of real radiation field, which would be created by appropriate, extended and oriented field in ICRU sphere, at a given depth d , along the radius directed opposite to the direction of oriented field; field extended and oriented is defined as the radiation field, in which the fluency and its spatial and energy distribution are the same as for the extended field, but the fluency itself has a specific direction.
- 4 - “Directional dose equivalent” denotes the dose equivalent in a given point of a real radiation field, which would be created by appropriate extended field in ICRU sphere at a given depth d , along the radius with specified direction, while the extended field is defined as the radiation field, in which the fluency and its directional and energy distribution have in the whole area the same values as in the real field at the point under consideration.

Dose equivalent referred to in explanations 2-4 denotes the product of ionizing radiation absorbed dose expressed in grey (Gy) at a specified tissue point and of the quality factor of this radiation Q , expressed in sievert (Sv).

Given depth d , referred to in explanations 2-4, denotes the depth that depending on the radiation penetration power equals: 10 mm for a strongly penetrating radiation, 0.07 mm for a weakly penetrating radiation (for skin), and 3 mm for eye lens.

ICRU sphere, referred to in explanations 3 and 4, and the radiation quality factor Q , are defined in Annex to the Regulation of the Council of Ministers of 26 May 2002 on ionizing radiation dose limits (O.J. No 111 Item 969).