

Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom

CHAPTER III

SYSTEM OF RADIATION PROTECTION

Article 5

General principles of radiation protection

Member States shall establish legal requirements and an appropriate regime of regulatory control which, for all exposure situations, reflect a system of radiation protection based on the principles of justification, optimisation and dose limitation:

- (a) Justification: Decisions introducing a practice shall be justified in the sense that such decisions shall be taken with the intent to ensure that the individual or societal benefit resulting from the practice outweighs the health detriment that it may cause. Decisions introducing or altering an exposure pathway for existing and emergency exposure situations shall be justified in the sense that they should do more good than harm.
- (b) Optimisation: Radiation protection of individuals subject to public or occupational exposure shall be optimised with the aim of keeping the magnitude of individual doses, the likelihood of exposure and the number of individuals exposed as low as reasonably achievable taking into account the current state of technical knowledge and economic and societal factors. The optimisation of the protection of individuals subject to medical exposure shall apply to the magnitude of individual doses and be consistent with the medical purpose of the exposure, as described in Article 56. This principle shall be applied not only in terms of effective dose but also, where appropriate, in terms of equivalent doses, as a precautionary measure to allow for uncertainties as to health detriment below the threshold for tissue reactions.
- (c) Dose limitation: In planned exposure situations, the sum of doses to an individual shall not exceed the dose limits laid down for occupational exposure or public exposure. Dose limits shall not apply to medical exposures.

SECTION 1

Tools for optimisation

Article 6

Dose constraints for occupational, public, and medical exposure

1 Member States shall ensure that, where appropriate, dose constraints are established for the purpose of prospective optimisation of protection:

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- a for occupational exposure, the dose constraint shall be established as an operational tool for optimisation by the undertaking under the general supervision of the competent authority. In the case of outside workers the dose constraint shall be established in cooperation between the employer and the undertaking.
 - b for public exposure, the dose constraint shall be set for the individual dose that members of the public receive from the planned operation of a specified radiation source. The competent authority shall ensure that the constraints are consistent with the dose limit for the sum of doses to the same individual from all authorised practices.
 - c for medical exposure, dose constraints shall apply only with regard to the protection of carers and comforters and volunteers participating in medical or biomedical research.
- 2 Dose constraints shall be established in terms of individual effective or equivalent doses over a defined appropriate time period.

Article 7

Reference levels

- 1 Member States shall ensure that reference levels are established for emergency and existing exposure situations. Optimisation of protection shall give priority to exposures above the reference level and shall continue to be implemented below the reference level.
- 2 The values chosen for reference levels shall depend upon the type of exposure situation. The choices of reference levels shall take into account both radiological protection requirements and societal criteria. For public exposure the establishment of reference levels shall take into account the range of reference levels set out in Annex I.
- 3 For existing exposure situations involving exposure to radon, the reference levels shall be set in terms of radon activity concentration in air as specified in Article 74 for members of the public and Article 54 for workers.

SECTION 2

Dose limitation

Article 8

Age limit for exposed workers

Member States shall ensure that subject to Article 11(2), persons under 18 years of age may not be assigned to any work which would result in their being exposed workers.

Article 9

Dose limits for occupational exposure

- 1 Member States shall ensure that dose limits for occupational exposure apply to the sum of annual occupational exposures of a worker from all authorised practices, occupational exposure to radon in workplaces requiring notification in accordance with Article 54(3), and other occupational exposure from existing exposure situations in accordance with Article 100(3). For emergency occupational exposure Article 53 shall apply.

2 The limit on the effective dose for occupational exposure shall be 20 mSv in any single year. However, in special circumstances or for certain exposure situations specified in national legislation, a higher effective dose of up to 50 mSv may be authorised by the competent authority in a single year, provided that the average annual dose over any five consecutive years, including the years for which the limit has been exceeded, does not exceed 20 mSv.

3 In addition to the limits on effective dose laid down in paragraph 2, the following limits on equivalent dose shall apply:

- a the limit on the equivalent dose for the lens of the eye shall be 20 mSv in a single year or 100 mSv in any five consecutive years subject to a maximum dose of 50 mSv in a single year, as specified in national legislation.
- b the limit on the equivalent dose for the skin shall be 500 mSv in a year, this limit shall apply to the dose averaged over any area of 1 cm², regardless of the area exposed;
- c the limit on the equivalent dose for the extremities shall be 500 mSv in a year.

Article 10

Protection of pregnant and breastfeeding workers

1 Member States shall ensure that the protection of the unborn child is comparable with that provided for members of the public. As soon as a pregnant worker informs the undertaking or, in the case of an outside worker, the employer, of the pregnancy, in accordance with national legislation the undertaking, and the employer, shall ensure that the employment conditions for the pregnant worker are such that the equivalent dose to the unborn child is as low as reasonably achievable and unlikely to exceed 1 mSv during at least the remainder of the pregnancy.

2 As soon as workers inform the undertaking, or in case of outside workers, the employer, that they are breastfeeding an infant, they shall not be employed in work involving a significant risk of intake of radionuclides or of bodily contamination.

Article 11

Dose limits for apprentices and students

1 Member States shall ensure that the dose limits for apprentices aged 18 years or over and students aged 18 years or over who, in the course of their studies, are obliged to work with radiation sources, shall be the same as the dose limits for occupational exposure laid down in Article 9.

2 Member States shall ensure that the limit on the effective dose for apprentices aged between 16 and 18 years and for students aged between 16 and 18 years who, in the course of their studies, are obliged to work with radiation sources, shall be 6 mSv in a year.

3 In addition to the limits on effective dose laid down in paragraph 2, the following limits on equivalent dose shall apply:

- a the limit on the equivalent dose for the lens of the eye shall be 15 mSv in a year;
- b the limit on the equivalent dose for the skin shall be 150 mSv in a year, averaged over any area of 1 cm², regardless of the area exposed;
- c the limit on the equivalent dose for the extremities shall be 150 mSv in a year.

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4 Member States shall ensure that the dose limits for apprentices and students who are not subject to the provisions of paragraphs 1, 2 and 3 shall be the same as the dose limits for members of the public as specified in Article 12.

Article 12

Dose limits for public exposure

1 Member States shall ensure that the dose limits for public exposure shall apply to the sum of annual exposures of a member of the public resulting from all authorised practices.

2 Member States shall set the limit on the effective dose for public exposure at 1 mSv in a year.

3 In addition to the dose limit referred to in paragraph 2, the following limits on the equivalent dose shall apply:

- a the limit on the equivalent dose for the lens of the eye shall be 15 mSv in a year;
- b the limit on the equivalent dose for the skin shall be 50 mSv in a year, averaged over any 1 cm² area of skin, regardless of the area exposed.

Article 13

Estimation of the effective and equivalent dose

For the estimation of effective and equivalent doses, the appropriate standard values and relationships shall be used. For external radiation, the operational quantities defined in section 2.3 of ICRP Publication 116 shall be used.