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Item 33

REGULATION OF THE COUNCIL OF MINISTERS

of 17 December 2020

on building materials which require determining the activity concentration of radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes, requirements to be fulfilled by these determinations, and the value of the activity concentration index which, once exceeded, requires informing proper authorities[1,2]

Based on art. 6b of the Act of 29 November 2000 - Atomic Law (Dz. U. 2019 item 1792, and 2020 items 284 and 322), it is ordered as follows:

§ 1. The regulation shall define:

1) building materials, in which the activity concentration of natural radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes shall be determined prior to marketing them on the territory of the Republic of Poland;

2) requirements for determining the activity concentration of natural radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes in the building materials mentioned in point 1, in particular the manner of collecting samples and their measurements, and factors taken into account when interpreting measurement results, as well as the manner of determining the activity concentration index of these isotopes;

3) the value of the activity concentration index of natural radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes in the building materials mentioned in point 1, which, once exceeded, requires informing the construction regulatory authorities.

§ 2. The building materials, in which the activity concentration of radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes is determined prior to marketing them on the territory of the Republic of Poland, shall be specified by an appendix to the regulation.

[1]Within the scope of its regulation, the present regulation implements 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 (Official Journal of the EU L 13 of 17 January 2014, p. 1, Official Journal of the EU L 72 of 17 March 2016, p. 69, Official Journal of the EU L 152 of 11 June 2019, p. 128, and Official Journal of the EU L 324 of 13 December 2019, p. 80).

2The present regulation has been notified to the European Commission on 4 September 2020 with the number 2020/0550/PL, in accordance with § 4 of the regulation of the Council of Ministers of 23 December 2002 on the manner of functioning of the national notification system for standards and legal acts (Dz. U. item 2039, and 2004 item 597), which implements the provisions of Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (codification) (Official Journal of the EU L 241 of 17 September 2015, p. 1).

§ 3. 1. The collection of samples for determining the activity concentration of natural radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes in building materials shall be carried out with a frequency depending on the technological process, in a manner ensuring representability of these samples.

2. Prior to being placed in a measuring vessel, the analysed building material shall be dried to dry mass and fragmented to a grain size below 2 mm.

3. If the determination of the radium Ra-226 content of a sample proceeds by determining the activity concentrations of its decay products, the measuring vessel with the sample shall be kept tightly closed before commencing the measurement for a period of no less than 14 days.

4. The mineral composition and the level of activity concentration of natural radioactive isotopes in the benchmarks used to calibrate the measurements shall correspond to the tested building materials.

5. The following shall be taken into account when interpreting measurement results:

1) background radiation not originating from the measured sample;

2) the impact of radiation from other isotopes than those measured, present in the sample;

3) the effect of self-absorption of radiation in the sample;

4) the lack of secular equilibrium between the radioactive isotopes.

§ 4. The activity concentration index of radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes (the I index) shall be calculated according to the formula:

$$I = \frac{C_{K-40}}{3000\,Bq/kg} + \frac{C_{Ra-226}}{300\,Bq/kg} + \frac{C_{Th-232}}{200\,Bq/kg}$$

where:

C_{K-40}, C_{Ra-226} and C_{Th-232} stand for the activity concentrations of potassium K-40, radium Ra-226 and thorium Th-232 isotopes, respectively, expressed in becquerels per kilogram (Bq/kg).

§ 5. The total uncertainty of determining the value of the index mentioned in § 4, with a confidence level of 0.95, cannot exceed 20% of its value, if it is no lower than 0.8.

§ 6. A value of the index mentioned in § 4 higher than 1 shall mean the possibility of exceeding the reference level for external exposure of people to indoor gamma radiation emitted by building materials, amounting to 1 mSv per year, and the necessity to inform construction supervision authorities about the exceeded value of this index.

§ 7. The existing provisions shall apply to determining the activity concentration of natural radioactive isotopes in building materials produced prior to the date of entry into force of the present regulation.

§ 8. The regulation enters into force 30 days after its promulgation.[3]

Prime Minister: *M. Morawiecki*

[3]The present regulation was preceded by regulation of the Council of Ministers of 2 January 2007 on requirements involving the shares of natural radioactive potassium K-40, radium Ra-226 and thorium Th-232 isotopes in raw materials and materials used in buildings intended to accommodate people and livestock, as well as in industrial waste used in building engineering, and controlling the shares of these isotopes (Dz. U. item 29), which in accordance with art. 37 Section 1 Item 1 of the Act of 13 June 2019 amending the Act - Atomic Law and the Act on Fire Protection (Dz. U. item 1593, and 2020 item 284) becomes repealed on the day when the present regulation enters into force.

Appendix to Regulation of the Council of Ministers
of 17 December 2020 (item 33)

BUILDING MATERIALS WHICH REQUIRE DETERMINING THE ACTIVITY CONCENTRATION OF RADIOACTIVE POTASSIUM K-40, RADIUM Ra-226 AND THORIUM Th-232 ISOTOPES

1. Building materials containing a naturally occurring radioactive material:
   - 1.1. alum shale;
   - 1.2. quartzite;
   - 1.3. of a magmatic origin:
     - 1.3.1. granitoids:
       - 1.3.1.1. granite;
       - 1.3.1.2. syenite;
     - 1.3.2. orthogneiss;
     - 1.3.3. porphyry;
     - 1.3.4. volcanic tuff;
     - 1.3.5. volcanic ash (pozzolan);
     - 1.3.6. lava.
2. Building materials incorporating residues from industries processing naturally occurring radioactive material:
   - 2.1. fly ash;
   - 2.2. phosphogypsum;
   - 2.3. phosphorus slag;
   - 2.4. tin slag;
   - 2.5. copper slag;
   - 2.6. red mud (residue from aluminium production);
   - 2.7. residues from steel production;
   - 2.8. rock material after the extraction and processing of uranium ore.