

REGULATION OF THE COUNCIL OF MINISTERS

of 3 December 2002

on the requirements imposed on the content of natural radioisotopes in raw materials and components applied in buildings for the accommodation of people and livestock, and in industrial waste applied in construction, and the control of radioisotope content.

(Journal of Laws no. 220, item 1850)

Pursuant to art. 6 section 3 of the Atomic Energy Law of 29 November 2000 (Journal of Laws of 2001, no. 3, item 18, no. 100, item 1085, no. 154, item 1800, of 2002, no. 74, item 676 no. 135, item 1145), the following is ordained:

§ 1. All references to natural radioisotopes hereunder shall be made in respect of the following isotopes: potassium K-40, radium Ra-226 and thorium Th-228.

§ 2. 1. The content of natural radioisotopes in raw materials and components applied in buildings for the accommodation of people and livestock, and in industrial waste applied in construction shall be determined with the application of:

- 1) f_1 activity indicator which determines the content of natural radioisotopes, and
- 2) f_2 activity indicator which determines the content of radium Ra-226

2. The activity indicators, as per section 1, are defined by the following formulas:

$$1) f_1 = \frac{S_K}{3000 \text{ Bq/kg}} + \frac{S_{Ra}}{300 \text{ Bq/kg}} + \frac{S_{Th}}{200 \text{ Bq/kg}},$$
$$2) f_2 = S_{Ra}$$

where:

S_K , S_{Ra} and S_{Th} denote the respective radioactive concentration of isotopes of potassium K-40, radium Ra-226 and thorium Th-228, expressed in Bq/kg.

§ 3. The values of f_1 and f_2 activity indicators shall not exceed the following values by more than 20%:

- 1) $f_1 = 1$ and $f_2 = 200$ Bq/kg in relation to raw materials and construction components applied in buildings for the accommodation of people and livestock;
- 2) $f_1 = 2$ and $f_2 = 400$ Bq/kg in relation to industrial waste applied in ground structures built in developed areas or areas designed for development pursuant to the local urban development plan, or applied to level such areas;
- 3) $f_1 = 3.5$ and $f_2 = 1,000$ Bq/kg in relation to industrial waste applied in ground parts of structures not mentioned in point 2 and to level areas not mentioned in point 2;
- 4) $f_1 = 7$ and $f_2 = 2,000$ Bq/kg in relation to industrial waste applied in underground parts of structures, as per point 3, and in underground structures, including railway and road tunnels, excluding industrial waste applied in underground mining excavations.

§ 4. Where industrial waste is applied to level the areas, as per §3 points 2 and 3, and to develop roads, sports or recreational facilities, the absorbed dose shall be limited to 0.3 $\mu\text{Gy/h}$ at the altitude of 1 m above the ground, road or site level, in particular by applying an additional layer of another material, while maintaining the required value of f_1 and f_2 indicators.

§ 5. The content of natural radioisotopes in raw materials and components applied in buildings for the accommodation of people and livestock, as well as in industrial waste applied in construction, shall be controlled by laboratories which:

- 1) have implemented a quality assurance system in respect of the performed tests, including:
 - a) general description of the applied testing methodology,
 - b) documentation of measuring devices and technical equipment,
 - c) instructions for collection and preparation of samples,
 - d) instructions for spectrometer operation,

- e) measurement instructions, including measurements to verify the correct operation of measuring devices,
- f) manner of recording measurement results,
- g) sample reports on control surveys and records of survey results,
- h) requirements concerning personnel qualifications.

2) are equipped with:

- a) devices for sample preparation (rushing, drying, sieving and weighing),
- b) gamma radiation spectrometer with a scintillating or semi-conductor detector for the measurement of the content of natural radioisotopes in samples,
- c) protective housing for the placement of detector and measurement vessel with the sample,
- d) sample sources for power calibration and controlling the stability of spectrometer operation,
- e) reference samples containing natural radioisotopes for spectrometer calibration;

3) operate in premises and an environment which meet manufacturer requirements specified in the technical documentation of the applied measuring devices and technical equipment;

4) participate, at own cost, in inter-laboratory comparative measurements organised by the President of the National Atomic Energy Agency, at least once every three years.

§ 6. 1. The sampling procedure for the purpose of control, as per §5, shall be conducted to ensure that representative samples are collected.

2. The controlled raw material, component or waste shall be dried to dry mass and crushed to produce grains of less than 2 mm prior to placement in the measurement vessel.

3. If radium Ra-226 is labelled in the sample by measuring the radiation of its disintegration products, prior to the measurement, the measurement vessel with the sample shall be tightly closed for a period of at least:

- 1) 5 days, if the controlled raw material, component or waste is of natural origin and has not been processed or stored for minimum 30 days, or
- 2) 14 days, if the controlled raw material, component or waste has been processed.

4. The mineral composition and the content of natural radioisotopes in reference to samples applied for the calibration of measurements corresponds to the controlled raw materials, components or waste.

5. Measurement results shall be interpreted in view of:

- 1) radiation background not generated by the measured sample;
- 2) impact of the radiation of isotopes other than those measured in the sample;
- 3) the effect of self-absorption of radiation in the sample.

6. The total uncertainty of the determination of f_1 and f_2 activity indicators at confidence level of 0.95 shall not exceed 20% of their value if not less than 0.8 of the value of the indicators specified in §3.

§ 7. This regulation becomes effective on 1 January 2003.

President of the Council of Ministers: *L. Miller*