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Comments of the Commission on Radiological Protection on questions relating to legal regulations concerning radiological protection in the former GDR which are still applicable to mining activities in the new federal states

Recommendation of the German Commission on Radiological Protection

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Stellungnahme der Strahlenschutzkommission zu Fragen im Zusammenhang mit Strahlenschutzbestimmungen der früheren DDR, die für bergbauliche Tätigkeiten in den neuen Bundesländern fortgelten

in Volume 36 of the Series “Publications of the Commission on Radiological Protection”.

In the event of any doubts about the meaning, the German original as published shall prevail.

Within the context of preparing a government statement on the constitutional complaints from various citizens and communities from the Saxony-Thuringian uranium mining region, the Federal Ministry for Environmental Protection has asked the Commission on Radiological Protection (SSK) for comments on the following questions from a radiological protection viewpoint:

Question 1:

Do the Regulations on Ensuring Atomic Safety and Radiological Protection (VOAS) take into account the recommendations of the Euratom basic safety standards and the International Commission on Radiological Protection (ICRP) for the principles and limit values for radiological protection?

Answer:

1. According to the Unification Treaty, the Regulations on Ensuring Atomic Safety and Radiological Protection (VOAS) and other legal regulations of the former GDR concerning radiological protection continue to apply to mining and other activities in the new federal states, if radioactive substances, in particular radon decay products, are present. For the activities mentioned, both the effect of radiation at work and the exposure of the population are therefore governed by the radiological protection principles and limit values of the VOAS. Such regulations were necessary as the Radiological Protection Ordinance (StrlSchV) does not apply, or only to a limited extent, in the area of the cleanup of mining

2. In their radiological protection principles the VOAS are based – as are the Euratom basic safety standards and the StrlSchV – on the recommendations of the International Commission on Radiological Protection (ICRP-26, 1977 and ICRP-32, 1981).

   According to the ICRP, the aims of radiological protection consist of preventing non-stochastic effects of radiation and optimising and limiting the probability of stochastic effects to values that are considered acceptable. These aims are also stated in § 9 VOAS and analogously in Article 6 of the Euratom basic safety standards and § 28 sect. 1 StrlSchV.

3. The “acceptable“ level for stochastic radiation damage is defined more precisely by the ICRP in recommendations on radiological protection concepts and effective dose limits. ICRP-26 recommends a limit for the effective dose for individuals of the population of 5 mSv per year. This figure has been accepted both by the Euratom basic safety standards and by the VOAS. According to a later recommendation of the ICRP (Statement from the 1983 Washington Meeting of the ICRP), the VOAS limit regulation additionally includes a regulation for the average value of the effective dose for individuals of the population over a certain period of time, according to which the average annual value over a period of 50 years must not exceed 1 mSv. In ICRP-60 the average value for radiation exposure for individuals of the population over a period of time is also limited to 1 mSv/a, although an average is given for a period of 5 years.

4. The limits of the VOAS correspond to those of the Euratom basic safety standards. They are more stringent in the following detailed regulations:

- The VOAS contain lower limits for exposure to radon decay products at work.

- Because of the additional average value regulation (cf. Pt. 3), the limit regulation of the VOAS for individuals of the population is more restrictive than the limit regulation in the Euratom basic safety standards.

Question 2:

Do the regulations on the enforcement condition of the VOAS, according to which compliance with the primary limit for individuals of the population can also be monitored through secondary or deduced limits, correspond to internationally common practice?

Answer:

The conditions contained in the VOAS to monitor compliance with the primary dose limits using additionally established secondary and deduced limits correspond to international practice. The Euratom basic safety standards and the StrlSchV also contain corresponding regulations. Stipulations of this kind are absolutely necessary for practical radiological protection, as it is not possible to directly measure the effective dose, which is calculated on the basis of secondary measurements and additional data.

Question 3:

Is the complainants' claim correct that application of the radiological protection limits of the VOAS for individuals of the population in the uranium mining areas of the new federal states leads to radiation effects for which damage to health, in particular the incidence of cancers, is to be expected with greater probability?

Answer:

The SSK does not share this interpretation, for the following reasons:

1. Comparison of the limit regulations shows that the radiological protection limits recommended by ICRP-26 are taken into account in the VOAS. Compared with the Euratom basic safety standards, the VOAS contain a more restrictive limit regulation for individuals of the population.

2. If the radiological protection limits of the VOAS are complied with, the aims of radiological protection to prevent non-stochastic radiation effects and to limit the probability of stochastic effects to acceptable values are achieved. This means in particular that the cancer rates in the population are not influenced significantly by exposures below the radiological protection limits of the VOAS.

   The 1990 recommendation of the ICRP (ICRP-60) has given an average risk (probability) for the general population of cancer leading to death of 5 % per Sievert. On the basis of this figure, we calculate, for a life-long (80 years) exposure exploiting the VOAS limit for individuals of the population of 1 mSv per year, a risk of dying from cancer caused by radiation of 0.4 % in addition to the risk of death from cancer, which in Germany lies in the region of 20 to 25 % of all deaths.

3. To summarise, we should therefore say that if the radiological protection limits of the VOAS are applied, humans in the mining areas do not have to expect “with more probability“ to contract cancer – as is claimed in the grounds for the constitutional complaints.