

The radioactivity of the Lower Danube between 1970 and 1974

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Under the auspices of the Institute for Atomic Physics a number of analyses have been effected on samples collected from the Danube between 1970-1974 from its entrance into this country and up to where it flows into the Black Sea.

The study has been enlisted on our thematic plan as a result of the ever increasing importance given to the supervision of the pollution degree of the environment in general and the supervision of the Danube's pollution particularly.

The programmes of industry and nuclear energetics development in the riparian countries are expected to bring about an increase of the radioactive contamination of the Danube, which call for a continuous and strict control of its degree of pollution.

The types of samples on which we took in our attention have been : the water of the Danube, sediment and a number of aquatic biological species. Besides, the vegetation of the Romanian bank of the Danube has also been studied.

Global beta and gamma analyses have been effected on the collected samples. The average values obtained in this interval have been situated below the maximum levels permitted by the international standards.

The yearly, averages of the total beta radioactivity of the Danube's water have been the following :

$$\begin{aligned}\Lambda 1970 &= (2,7 \pm 0,4) \text{ pC/l} \\ \Lambda 1971 &= (3,3 \pm 0,6) \text{ pC/l} \\ \Lambda 1972 &= (5,0 \pm 1,0) \text{ pC/l} \\ \Lambda 1973 &= (4,8 \pm 0,9) \text{ pC/l} \\ \Lambda 1974 &= (6,3 \pm 1,2) \text{ pC/l} \\ & \text{(6 months)}\end{aligned}$$

On some water samples tritium analyses have been effected. The obtained values ranging from 6,9 - 11,5 pC/ml are also situated below the maximum values permitted for that isotope.

There have also been effected identifications of the gamma radio-isotopes contained in the samples by the method of scintillation spectrometry and semiconductors.

The spectrometric analyses effected on the sediment have pointed the presence of the peaks from the family of uranium, thorium and of the potassium; the ones effected on fish bone meal have indicated only the presence of potassium.

