

# Radioecological monitoring in the Arctic.

EMELYANOV A. M.<sup>1</sup> NOVIKOV A.P. LAVRINOVICH E. V.

<sup>1</sup> Vernadsky Institute of Geochemistry and Analytical Chemistry,  
Russian Academy of Sciences, Moscow,  
Kosygin Street, 19, 119991 Russian Federation,  
Ksander93@mail.ru

Arctic regions play an invaluable role on the planet in stabilizing biosphere processes and climate. The nature of the Arctic zone is extremely vulnerable to anthropogenic interference due to the slow circulation of mass and energy exchanges in cold latitudes. The most relevant direction of modern radioecological studies of the Arctic region is the studying man-made radionuclides laws, the assessment of the migration capacity of the latter and their accumulation in the shelf zone. Samples were taken in the course of expeditionary research on the research vessel "Academician Mstislav Keldysh" in the Kara sea and in various bays of the Novaya Zemlya archipelago, as well as at the mouths of the Ob and Yenisei rivers.

The concentration of neptunium in solutions was determined by the method of luminescent analysis on a fluorescent filter analyzer in the near IR range (1713 nm). Plutonium was determined by alpha spectrometry, <sup>137</sup>Cs by gamma spectrometry.

Studies have shown that the content of plutonium in water is slightly higher than global. At the same time, <sup>238</sup>Pu was not detected in the water, which shows a low isotope ratio of 238 and 239+240 plutonium. This suggests that global deposition is likely to be the main source of plutonium entering the marine environment. Although the content of neptunium in global deposition is almost two orders of magnitude lower than the content of plutonium, we found that the activity of neptunium in water is an order of magnitude higher than the activity of plutonium (0.76-1.89 Bq / m<sup>3</sup>).

The benthic study showed that the content of radiocesium and plutonium in the selected samples is below the detection limit at a sample weight of 100-200 g of raw weight (0.1 Bq for <sup>137</sup>Cs and 0.001 Bq for 239+240Pu). Therefore, the content of these radionuclides in benthos is lower than 1 Bq/kg for <sup>137</sup>Cs and 10<sup>-2</sup> for 239,240 Pu. However, the content of neptunium in benthic samples is above the detection limit (1-80 Bq / kg wet weight). This is typical only for the bays of the Novaya Zemlya archipelago, where radioactive waste was buried.

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