

Formation of surface waters radioactive contamination of Dnieper basin

DOLIN, V.V., DUDAR, T.V. State Scientific Center of Environmental Radiogeochemistry, Kyiv, Ukraine.

Radionuclides flowing out along Dnieper river into the Black Sea and finally contamination of the Mediterranean Sea is determined by water regime of the Chernobyl Exclusion Zone hydrographic network. Specific activity of suspension in river water reaches up to 1500 Bq/kg for ^{137}Cs and 700000 Bq/kg for ^{90}Sr , that is significantly bigger value than contamination level in soils and bottom sediments. About 80% of ^{137}Cs and more than ^{90}Sr in river water is represented by cationic forms. The rest part of radionuclides is distributed equally between suspensions and conditionally solved organic matter. During the last 13 years after the Chernobyl accident the complete redistribution of radionuclides between their occurrence forms and migration into direction of reduction of suspension particles amount and increasing of conditionally solved forms have been taken place. The main dangerous fact of without obstacle uptake of fission products into Mediterranean Sea basin is that cationic radionuclides forms represent the biggest part in water river composition. Our assessment of every year uptake from the Exclusion Zone into the Black Sea is as follows: 6×10^{11} Bq for ^{137}Cs and 7×10^{12} Bq for ^{90}Sr . Nowadays that is the most dangerous period from the geochemical point of view of solved radionuclides forms formation which are able to be included into water migration and biochemical chains. This period will last up to 10-15 years, after that the velocity of natural ^{137}Cs and ^{90}Sr decay will have bigger value than the velocity of their mobilization. And so native water contamination and uranium fission products uptake into trophic chains will reduce.