

History of radionuclides accumulation in the Port of Rijeka sediments (Croatia)

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The main goal of this investigations was to evaluate the anthropogenic pressure in the Port of Rijeka, Croatia by determining the natural radionuclides quantities ^{40}K , ^{226}Ra , ^{232}Th and ^{238}U in the sediment columns.

This case study is a contribution to the knowledge on the radionuclides distribution in the Adriatic sea as the Port of Rijeka is the greatest and busiest transport port in the northern Adriatic. These natural radionuclides are most frequent and abundant in sediments. Their increased quantities can imply a severe threat for the benthic community and, following the food chain, human health. Knowledge on the mechanism of their dissolution and remineralization is of great interest. The spatial distribution of natural radionuclides in recent sedimentation areas is under significant influence of terrigenous material input.

Sedimentation rates were estimated using the vertical distribution of ^{137}Cs activity in the sediments columns and annually amounts were 5-6 mm, 6-7 mm and 3-4 mm. K and Th. Following the natural radionuclides activities through the sediment columns

it was established that all values are within natural ones. ^{226}Ra and ^{238}U distributions in the sediment columns were mostly equable through time showing no activities connected with a phosphate ore, unlike in the Šibenik port which is an at least 10 times smaller port but with intensive phosphate ore transshipment. ^{40}K and ^{232}Th distribution shows a single event of significant inflow of terrigenous material at about 15 cm from the surface of the columns. All other activities showed that anthropogenic pressure to the Port of Rijeka is not intensive as expected considering extremely high occurrence of maritime and port activities.

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