**The spatial-temporal variation and transport of artificial radionuclides (137Cs and 239,240Pu) around Korea Seas (East Sea, Yellow Sea, Southern coastal of Korea)**

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We analyzed spatiotemporal variation in the artificial radionuclides 137Cs and 239,240Pu in seawater around Korea Seas (East Sea, Yellow Sea and Southern coastal of Korea) from 2018 to 2024. The 137Cs activity in surface water of the East Sea range of 0.88 - 1.97 mBq kg-1 (average: 1.33 ± 0.29 mBq kg-1, n=21). Vertically, the highest activities of 137Cs were sub-to surface later (0 - 100 m) and decreased with depths. The 239,240Pu activities range of 1.70 - 5.18 μ㏃ kg-1 (average: 3.83 ± 1.43 μ㏃ kg-1, n=11) in the surface layer. 239,240Pu activities were lower in the surface layer and also decreased with depths. This trend appears to be result from the adsorption onto particle and resultant sedimentation of Pu in the water column. The surface layer 137Cs activities in the Yellow sea and Southern coastal of Korea ranged from 0.56 - 1.96 mBq kg-1 (average: 1.42 ± 0.39 mBq kg-1, n= 10), 0.92 to 2.43 mBq kg-1 (average: 1.65 ± 0.33 mBq kg-1, n=29), respectively. In these regions, the spatial and vertical distributions of 137Cs and 239,240Pu were almost consistent. However, a substantial increase in 137Cs was observed at some stations in the southernmost part of South Sea, which seems to be due to the fluvial input of surround region. Overall, the distribution of 137Cs and 239,240Pu seems to be primarily influenced by local boundary inputs, such as freshwater from river, atmospheric deposition, sediment resuspension, and others from the surrounding Far East Asian continents. We quantified the interlinked budget balance of 137Cs between the East Sea, Yellow Sea and Southern coastal of Korea. This study suggests that advection from the open ocean is the dominant source of 137Cs in the Korean Seas and the major sinks for 137Cs in these regions are natural decay and removal via sinking flux.