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241Pu in seabirds

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The paper presents unique data of plutonium 241Pu study in seabirds from northern Eurasia, permanently or temporally living at the southern Baltic Sea coast. Together 10 marine birds species were examined: 3 species of permanently residing at the southern Baltic, 4 species of wintering birds and 3 species of migrating birds; about 150 samples were analyzed.
The obtained results indicated plutonium is non-uniformly distributed in organs and tissues of analyzed seabirds. Generally the highest plutonium concentrations were found in the digestion organs and feathers, next in skeleton, and the lowest in muscles. Among analyzed birds the highest 241Pu concentration was found in viscera, its activities in the digestive organs ranged from 9.7±2.5 μBq⋅g-1 ww (13.0% of total 241Pu) in great cormorant (P. carbo) to 228±39 μBq⋅g-1 ww (79.6% of total 241Pu) in velvet scoter (M. fusca). High 241Pu concentrations were also found in liver where ranged from 21±4 μBq⋅g-1 ww in velvet scoter (M. fusca) (2.2% of total 241Pu) to 159±31 μBq⋅g-1 ww in tufted duck (A. fuligula) and feathers where ranged from 15±4 μBq⋅g-1 ww in great cormorant (P. carbo) (11.6% of total 241Pu) to 132±59 μBq⋅g-1 ww (34.2% of total 241Pu) in common eider (S. mollissima). The main source of plutonium in analyzed marine birds was global atmospheric fallout as well as the Chernobyl accident, which was confirmed by plutonium activity ratios of 241Pu/239+240Pu as well as 238Pu/239+240Pu.
On the basis of the average 241Pu concentrations in the southern Baltic Sea biocenosis components the plutonium content in marine organisms increases as: seabirds < fish < phytobenthos < phytoplankton < zooplankton < zoobenthos.
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