Plutonium studies in the Southern Baltic Sea

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Plutonium, a transuranic of the actinide group with an atomic number of 94, is among the most toxic radioactive elements. In the environment, plutonium is an element that comes primarily from anthropogenic sources, which are associated with nuclear weapons testing, the development of nuclear power, and the intensive development of nuclear programs in industry. Thus, plutonium contamination in the southern Baltic Sea has been extensively studied due to environmental and health implications. The subject of this presentation is an overview of studies conducted on the occurrence of plutonium in the southern Baltic Sea ecosystem, and it sums up the results on plutonium radioisotopes activity concentrations and the ²⁴⁰Pu/²³⁹Pu isotopic ratios and ²³⁸Pu/²³⁹⁺²⁴⁰Pu and ²⁴¹Pu/²³⁹⁺²⁴⁰Pu activity ratios determined over the years. Research has revealed varying concentrations of plutonium, with distribution varying among species and tissues. Ongoing monitoring and research are essential to understand the long-term behavior of plutonium in the marine environment, especially its remobilization from sediments.