

A toxic-free environment ambition in the light of the Polish Baltic Sea coastal zone pollution by heavy metals

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ABSTRACT

The European Green Deal highlights the need for anthropogenic pressure reduction according to the toxic-free environment ambition. Heavy metals are the largest threat to the food sector sustainability while they are easily bioaccumulated by living organisms, especially aquatic species. Cadmium (Cd) and mercury (Hg) introduced to the food chain were proven to have a toxic impact on human health causing serious diseases such as Parkinson's disease, kidney and heart failure, osteoporosis, etc. Lead(Pb) can be accumulated by humans from contaminated plants and water resulting in mental retardation and birth defects. The study analyzes the sources of the above heavy metals pollution in the Polish coastal zone of the Baltic Sea which is the main fishing area for the fishing industry in Poland. Available data on the atmospheric deposition and riverine loads of Cd, Pb, Hg were analyzed to present the current trends of heavy metals contamination in 3 basins located in the Polish coastal zone: Bornholm Basin (BB), Eastern Gotland Basin (EGB) and Gdańsk Basin (GB). The results show that in the BB and EGB the limits for all 3 heavy metals were exceeded even by 139.58% in terms of Cd in 2018 in both basins. Pb limit was exceeded in 2018 by 84.62% in BB and by 123.08% in 2017 in EGB. On the contrary, values below the limit for Cd and Hg were observed in GB during the entire monitoring period, while the limit for Pb was only temporarily exceeded.

Keywords: Heavy metals; Cadmium; Lead; Mercury; Toxic-free environment; European Green Deal; Baltic Sea; Coastal waters; Marine pollution

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