PAHs and metals in a Coastal Lagoon (Esmoriz/Paramos), Portugal

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Abstract

Esmoriz/Paramos is a coastal lagoon on the northwest coast of Portugal with an area of approximately 5.6 km^2 and occasional communication with the sea. This habitat has a great ecological importance due to the characteristics of its fauna and vegetation. For the last 25 years, the wet area of the lagoon has been reduced as well as its biodiversity and at present it is very degraded and in-filled. The transport of particles from land through the main affluent is one of the causes for siltation. Pollution sources include untreated sewage water, industrial effluents and run-off from agricultural activities. Dredging the sediments is the strategy planned by the local authorities to restore this ecosystem and improve its recreational value. Thus, evaluation of sediment quality is important for planning disposal purposes. The objective of this work was to evaluate de water quality of the lagoon and to assess the contamination of its sediments by polycyclic aromatic hydrocarbons (PAHs) and heavy metals. The water analysis carried out in three different stations within the lagoon, showed a poor quality, namely low oxygen concentrations and high inorganic nitrogen and biochemical oxygen demand, whereas the sediments revealed moderate concentrations of PAHs with different patterns of distribution along stations and depth. Zinc was the most abundant metal followed by copper and smaller concentrations of lead and chromium. Metal variation in sediments was larger between stations than along depth. Therefore an average concentration of metals exposure to living organisms was calculated.

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