

# Dispersion of heavy metals in the sediments of the central coast of Asturias (Bay of Viscay, Spain)

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Asturias (North of Spain) has an important history related to a large mining activity and the extensive presence of heavy steel and metallurgical industry associated with mining resources. This history has been very important in the central zone of the region where the alteration of the geochemical partition in rivers and estuaries has been widely related to anthropic activities. However, the impact on the central coastal zone of the region has barely begun to be studied. For this reason, in this investigation 71 sediment samples collected in different areas and at different depths have been studied to make a first approximation of the contamination of coastal sediments and its potential impact on the organisms present in it. In each sediment sample, the 8 heavy metals with the greatest environmental problems have been analysed according to OSPAR.

The results show that the concentrations of Hg, Pb and Zn are the most anomalous in the coastal sediments studied. In the case of Hg, the concentrations varied in a range between 0.10 and 1.13  $\mu\text{g g}^{-1}$ , with 70% of the samples exceeding the OSPAR background value for pristine areas (BAC), and 45% of the samples exceeding the OSPAR Environmental risk level (ERL). For Pb, its concentrations varied between 3.8 and 83.4  $\mu\text{g g}^{-1}$ , in this case exceeding 80% of the samples the BAC and only 23% of them the ERL. Finally, Zn concentrations varied between 14.5 and 572  $\mu\text{g g}^{-1}$ , exceeding 45% of the samples both the BAC and the ERL. Particularizing these three elements, two anthropic sources were identified as the main causes of their enrichment. In the case of Hg, the majority of enrichments are due to contributions from the Nalón River, which has been widely studied and identified as an important source of this element's contribution to the coastal environment. On the other hand, in the case of Pb and Zn, the greatest enrichments of both elements are located in the surroundings of the city of Avilés, in which there is a wide presence of heavy industry factories, associating these enrichments with the dispersion of pollution produced by these industries.

