LEAD POLLUTION IN THE BLACK SEA AND ITS SOURCES

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ABSTRACT

Lead pollution and its sources have been investigated in the south-eastern end south-western Black Sea. The surfacial sediments and mussels were collected in different seasons of the year from 14 source and 4 control stations in the south-eastern and 9 source and 4 control stations in the south-western Black Sea and analysed for their lead content in order to evaluate the land-based sources of this metal.

In the south-western Black Sea, the highest lead concentrations were obtained in sediments from Inebolu, in the central Turkish Black Sea coast, followed by those from around Zonguldak where many coal mines and a heavy ship traffic occur. The concentrations increased from middle to the western part of the Black Sea. The effect of Danube river is may be a reason for this increase. Sediments taken in September had the highest lead concentrations, followed by the samples of December.

Very high lead concentrations (> 10 ppm wet weight) in the mussels were obtained at the stations where sediments contained also high lead levels. Contrary to sediments, the highest lead concentrations in mussels were measured in January and April.

In the south-eastern Black Sea, sediments from the easternmost part and from the central part (around Giresun) contained the highest lead concentrations. Especially the samples taken from rivers, creeks and effluents had very high lead concentrations which lead to the conclusion that significant amount of lead comes trough these sources. The highest lead concentrations were found in sediments collected in October, followed by those of December.

The mussels from Sinop region exhibited the highest lead concentrations though the sediments from the same region had the lower concentrations.

Finally, there are several land-based sources of lead in the south-eastern and south-western Black Sea. The lead concentrations in sediments from the south-eastern region were 8 to 10 fold higher than those from the south-west. However, the situation was reverse for mussels; the highest concentrations in samples from the south-western region were >10 ppm compared to 1.70 ppm in those from the south-east.

It is worth studying also transport of pollution by surface currents from the Black Sea to the Marmara Sea and the northern Aegean Sea with regard to total suspended sediments (TSS) and the pelagic species, e.g. zooplankton.

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