

## TERRESTRIAL NATURAL AND ANTROPOGENIC DISTRUBITION OF HEAVY METAL (CU) IN SEDIMENTS OF THE TRABZON REGION IN THE BLACK SEA

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### PRIRODNA I ANTROPOGENA DISTRIBUCIJA TEŠKOG METALA(CU) U SEDIMENETIMA TRABZONSKOG REGION CRNOG MORA

#### *Abstract*

In this study, dispersion of Cu element was examined in the coastline of Trabzon, which is the most populated and industrialized part of the Eastern Black Sea region. Sampling studies were carried out in 3 distinct areas on the coast of Trabzon, Değirmendere region, Yanbolu region and Solaklı region. In each region, 8 stations were determined to be studied having various distances, from 0 to 250 meters, from the coast within the boundaries of the studied areas. During the study, the bottom sediment layer (0-5 cm) was taken from 3 different regions and a total 24 stations for sediment analysis were established.

We found that heavy metal concentration in the Yanbolu region had a minimum concentration value ( $52,06 \pm 14,42$  ppm), Solaklı region had a maximum concentration value ( $78,57 \pm 15,84$  ppm) and Değirmendere region had a concentration value ( $63,97 \pm 6,92$  ppm) in the spring season. Yanbolu region had a minimum concentration value ( $53,97 \pm 9,40$  ppm), Solaklı region had a maximum concentration value ( $90,45 \pm 38,46$  ppm) and Değirmendere region had a concentration value ( $61,26 \pm 12,78$  ppm) in the summer season. Yanbolu region had a minimum concentration value ( $64,55 \pm 7,17$  ppm), Solaklı region had a maximum concentration value ( $107,06 \pm 26,98$  ppm) and Değirmendere region had a concentration value ( $86,05 \pm 3,19$  ppm) in the autumn season. Yanbolu region had a minimum concentration value ( $56,87 \pm 7,71$  ppm), Solaklı region had a maximum concentration value ( $76,21 \pm 15,65$  ppm) and Değirmendere region had a concentration value ( $68,70 \pm 8,89$  ppm) in the winter season. We found that heavy metal (Cu) concentration in the Yanbolu region had the lowest concentration value and Solaklı region had the highest concentration value in the study area in all

seasons. According to all seasons, the spring season had the lowest concentration value and the autumn season had the highest concentration value.

When the sediment enrichment factor (SEF) is present in all regions, because the SEF values was higher than 1 for the spring reason (Değirmendere region: 1,64, Yanbolu region: 1,39, Solaklı region: 1,79), the summer reason (Değirmendere region: 1,68, Yanbolu region: 1,51, Solaklı region: 2,14), the autumn season (Değirmendere region: 2,02, Yanbolu region: 1,66, Solaklı region: 2,72), the winter (Değirmendere region: 1,87, Yanbolu region: 1,60, Solaklı region: 1,91) of this element, it can be concluded that the sediment layer in Trabzon is rich in this metal.

According to Pollution Load Index (PLI), the spring reason (Değirmendere region: 1,15, Yanbolu region: 1,71, Solaklı region: 1,09), the summer reason (Değirmendere region: 1,33, Yanbolu region: 1,18, Solaklı region: 2,87), the autumn season (Değirmendere region: 1,90 Yanbolu region: 1,42, Solaklı region: 2,49), the winter (Değirmendere region: 1,51, Yanbolu region: 1,24, Solaklı region: 1,66) of this element have also been calculated.

The examination of sediment enrichment factor (SEF) and Pollution Load Index (PLI) reveal the presence of Cu metal which is indicative of heavy metal pollution in the sampling area.

**Key words:** *Black sea, Sediment, Heavy metal, Sediment enrichment factor (SEF), Pollution Load Index (PLI)*