

## LAND-BASED SOURCES OF COPPER IN THE BLACK SEA

M. ÜNSAL

Institute of Marine Sciences, Middle East Technical University  
P.O. Box: 28 33731 Erdemli, İçel /TURKEY

The land-based sources of copper were studied along the Black Sea coasts of Turkey. Total copper concentrations were determined in surficial sediments mussels collected from 20 stations in the western and eastern parts of the Black Sea during 1992 to 1996.

In the western Black Sea, the highest copper concentrations in the sediments were measured in İnebolu (st.6) and followed by İğneada station (St.1). In the eastern part, sediments from Hopa (St.20) and Sürmene (St.19) had the highest copper values. Rivers and some creeks discharged along the Turkish coast contributed also to copper concentrations in the sediments and mussels. Stations 6,19 and 29 are close to copper mines and refineries which are therefore suggested to be the main sources of copper pollution in the Black Sea. The high copper concentration measured at St.1 resulted probably from Danube river discharge.

The highest copper concentrations in the mussels were obtained also at the same stations where sediments contained the highest copper levels. This reflected therefore the copper pollution in the sediments.

The results lead to the strong suggestion that, the copper is of terrigenous origin and that the mines and refineries are its main sources in the Black Sea. Thus these sources should be considered as the hot points of copper pollution in this sea.