

THE EFFECET OF DEEP SEA DISCHARGE OF WASTEWATER OF CAYELI COPPER COMPANY IN THE MARINE ECOSYSTEM OF THE SOUTH EASTERN BLACK SEA

HACER KAYHAN¹, MUHAMMET BORAN², ERCAN KÖSE²

¹*Çayeli Copper Company, Rize, Turkey*

²*Karadeniz Technical University, Faculty of Marine Sciences, Department of Fisheries Technology Engineering, 61530 Sürmene, Trabzon, Turkey*

EFEKTI DUBOKO MORSKOG UPUSTA OTPADNE VODE KOMPANIJE CAYELI COPPER NA MARINSKI EKOSISTEM JUŽNO-ISTOČNOG DELA CRNOG MORA

Abstract

The Black Sea receives considerable quantities of contaminants from urban and industrial waste water discharges. The impact of these contaminants on marine ecosystem should be monitored. Therefore, it is very important to determine the level of pollutants entering to the marine environment.

The aim of this study was to determine the impact of wastewater, discharged by Çayeli Copper Company with deep sea discharge system, to the coastal area of the south eastern Black Sea. The study was carried out between 1993-1995 and 2002-2006. Seven sampling stations were selected and samples were taken from surface, 75 m, 150 m, 200 m, and 320 m depth. Temperature, salinity, pH, dissolved oxygen, alkalinity, hydrogen sulfide, copper, zinc, lead, iron, cadmium, mercury, arsenic, and manganese levels were measured at each station. During the study period, temperature, dissolved oxygen, pH and salinity were found to be 7.94-27.33°C, 6.90-11.18 mg/L, 7.90-8.40 and ‰16.74-18.24, respectively at surface water. Maximum values of As, Hg, Pb, Cd, Mn, Fe, Cu and Zn were 7.32 µg/L, 1.36 µg/L, 17.83 µg/L, 0.80 µg/L, 571.60 µg/L, 44.49 µg/L, 11.55 µg/L, 112.27 µg/L, respectively. These results indicate that none of the findings are above the general sea water quality standard as stated in Turkish Water Pollution and Control regulations.

During the research period, seasonal and temporal distribution of heavy metals were not uniform, and there was no significant trends in the heavy metal pollution in the study

area, therefore it can be concluded that discharge from Çayeli Copper Company has no noticeable effect on the water column of the receiving environment.

Key words: *Deep sea discharge, Heavy metal pollution, Black Sea, Çayeli Copper Company*