

A research on coliform bacteria in the Golden Horn Estuary (Sea of Marmara, Turkey)

Necati Karabas^a, Seyfettin Tas^{a,*}, Gokhan Onder Erguven^b, Hurrem Bayhan^c

^aIstanbul University Institute of Marine Sciences and Management, Istanbul, Turkey, email: necatikarabas@hotmail.com (N. Karabas), stas@istanbul.edu.tr (S. Tas)

^bMunzur University Faculty of Engineering Department of Environmental Engineering, Tunceli, Turkey, email: gokhanondererguven@gmail.com (G.O. Erguven)

^cYildiz Technical University Faculty of Civil Engineering Department of Environmental Engineering, Istanbul, Turkey, email: hurrembayhan@gmail.com (H. Bayhan)

Received 24 January 2018; Accepted 13 May 2018

ABSTRACT

Spatio-temporal variation of the total and fecal coliform groups as bacteriological indicators in the marine environment was investigated in surface water of the Golden Horn Estuary in monthly intervals between June 2012 and May 2013. Temperature, salinity, Secchi depth, pH, dissolved oxygen and oxygen saturation were measured at 10 stations simultaneously with bacteriological analyses. Highest total coliform counts in surface water was 940×10^3 CFU/100 ml at the Alibeykoy Creek in November and highest fecal coliform was 178×10^3 CFU/100 ml at the same area in October. The lowest coliform counts were observed during summer, while the highest counts were in autumn. During rainy days, some domestic wastewater overflowing from sewerages are discharged to the estuary, which those water adversely affect water quality. The total and fecal coliform counts in surface water increased gradually from the lower to upper section of the estuary. Although the Black Sea water pumping from the Strait of Istanbul to the Golden Horn by Kagithane Creek is an important factor in the decrease of pollution and better water quality, there are still some runoff materials including uncontrolled discharges particularly in the Alibeykoy Creek. The results of this study showed that the bacteriological pollution increased due to municipal wastewater resulting from overflow after the precipitation and the surrounding waters of the Golden Horn basin mix with surface waters. Thus, the most important factor in order to decrease the bacteriological pollution is to provide a full control of the surface discharges.

Keywords: Coliform bacteria; Bacteriological pollution; Water quality; Golden Horn Estuary

*Corresponding author.