

Ecological risk assessments of heavy metals in surface sediments collected from Haqal coastal waters (Tabuk region), Saudi Arabia

ABSTRACT

Haqal is a small city located in north-western part of Arabian Peninsula. The anthropogenic activities in this region are evident. This region is targeted for future development by Saudi government. In this study, the surface sediment of Haqal coastal waters were analysed for heavy metals (Cd, Cu, Fe, Ni, Pb, and Zn). The total concentration (mg/kg dry weight) ranged from 0.012-0.186 for Cd, 0.582-1.13 for Cu, 0.51-2.18 for Ni, 0.68-2.64 for Pb, 1.97-4.52 for Zn while for Fe, it ranges from 0.155 to 0.254%. Based on ecological risk assessment results, the values of PERI were categorised as 'low ecological risk', thus all sampling sites were unpolluted with heavy metals. Despite that, this monitoring study had a positive result for non-heavy metal pollution, future mitigation of the heavy metal pollution in coastal areas of Tabuk should be given priority by the authorities. The present study can be considered as the first effort to monitor the pollution of heavy metals in Haqal. This provides baseline information for future ecotoxicological studies which can involve application of bioindicators to assess the quality of the marine environment in this region.

Keyword: The Red Sea; Marine environment; Arabian Peninsula; Pollution

