



Heavy metals in mangrove sediments of the central Arabian Gulf shoreline, Saudi Arabia

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Abstract

To assess heavy metals in mangrove swamps of Sehat and Tarut coastal areas along Arabian Gulf, 18 samples were collected for Al, V, Cr, Mn, Cu, Zn, Cd, Pb, Hg, Sr, As, Fe, Co and Ni analysis using Inductively Coupled Plasma-Mass Spectrometer (ICP-MS). The results indicated that the distribution of some metals was largely controlled by anthropogenic inputs, while others were of terrigenous origin and most strongly associated with distribution of aluminum and total organic carbon in sediments. Mangrove sediments were extremely severe enriched with Sr (EF = 67.59) and very severe enriched with V, Hg, Cd, Cu, As (EF = 44.28, 37.45, 35.77, 25.97 and 11.53 respectively). Average values of Sr, V, Hg, Cd, Cu, Ni, As and Cr in the present mangrove sediments were mostly higher than the ones recorded from the Mediterranean Sea, the Red Sea, the Gulf of Aqaba, the Caspian Sea, the Arabian and Oman gulfs, coast of Tanzania, Sediment quality guidelines and the background shale and the earth crust. Landfilling due to coastal infrastructure development around mangrove forests and oil spills as well as petrochemical and desalination effluents from Al-Jubail industrial city to