

WATER QUALITY OF RED SEA COAST OFF JEDDAH IMPACTED BY DISCHARGES FROM TWO POLLUTED SAUDI LAGOONS

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The water quality of the Red Sea coastal area off Jeddah City Center is studied. This area receives sewage discharges via two outlets of two inland lagoons namely Arbaeen (AR) and Reayat Al-Shabab (RA) Lagoons. The parameters studied are salinity, dissolved oxygen (DO) and nutrients PO_4 , SiO_4 , NH_4 , NO_2 and NO_3 as well as transparency and chlorophyll-a. The results reveal the general enrichment of the water of this coastal area with the nutrients particularly PO_4 , SiO_4 and NH_4 in addition to chlorophyll a and the depletion in its DO content with remarkable lower salinity and transparency values with respect to the corresponding levels of the remote proper Red Sea water. Study of the surface distribution of the studied water quality parameters reveals presence of four main water types in the region. Two of them are in front of the two outlets of the two lagoons (sources of the discharged waste non-saline effluents) characterized by lowest salinity and DO values and highest levels of the sewage indicated nutrients. These two water types are separated from each other by another water type of intermediate hydro-chemical values between those of the sewage contaminated waters and those of the offshore seaward proper Red Sea water. Vertically, the area is covered by a lens of surface brackish (Red Sea water diluted with the discharged non-saline effluents) layer overlies a deeper one of more proper Red Seawater. The thickness of this layer is increasing seaward. In this respect, the present area can be considered as an estuary. The level of PO_4 , transparency and chlorophyll-a biomass as well as the depletion in the DO refer to its eutrophication. This has led to the perish of most of the local barrier coral reefs in this important coastal area. Therefore a solution for this pollution problem is urgently needed before irreversible damage is reached.