

Trace Metals Concentration in Eastern Part of Sulaibikhat Bay Adjacent to Kuwait University -Shuwaikh - and their Effect on Foraminifera

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The area under investigation is located in the eastern part of Sulibikhat Bay adjacent to Kuwait University in Shuwaikh. The area includes a wide mesotidal flat and low energy zone which is covered with mud and muddy sediments highly affected by pollutants from sewage discharges. Part of the area has been rehabilitated by removing wrecked ships and contaminated sediments.

The objectives is to find the concentrations of trace metals in the area and their effect on foraminifera and to identify different environmental factors (parameters) that control the distribution and deformation of foraminiferal organisms.

Sixty sediment samples were collected from 30 stations during the winter 2006 and summer 2006 seasons. Temperature, salinity, pH, dissolved oxygen, turbidity and grain size were studied as factors which would affect foraminiferal species. All sediment samples were analyzed for trace metals concentration and foraminiferal distribution and deformation. Concentrations of eleven trace metal elements (Fe, Pb, Hg, Si, Mn, Zn, Cd, Cu, Cr, Ni, and V) and total organic carbon were analyzed for geochemical studies. The study showed that trace metals in sediments were highly contaminated by total organic carbon, zinc, chromium, cadmium, nickel and vanadium. Lead, manganese, and copper have increased above their normal limits. Iron concentration decreased after removing the wrecked ships. Mercury and silicon concentrations have not been studied before. Areas close to the shoreline were most polluted with trace metals and total organic carbon, and had very few or no foraminiferal species.

Rotaliina, Miliolina, Textulariina, and Lagenina were identified as foraminiferal suborders. Foraminiferal density and diversity were higher during the winter than the summer season as far as environmental stress is concerned. The deformed foraminiferal species during the winter and summer seasons were 0.89 % and 0.71 %, respectively.

The study showed that the area was highly stressed, which had an adverse effect on foraminifera. To avoid future environmental problems, this study recommended that it has to isolate the sewage from Shuwaikh industrial area, treat domestic sewage before discharge into the sea, provide environmental techniques for controlling oil spills, and activate Kuwaiti Law 12 of 1964 regarding the prevention of pollutants by oil spills in navigable waters.

Biography:

Amal J Alkandari was born in 4th Nov, 1967. She completed her PhD at Arabian Gulf University in Environmental Marine Science. She completed her Masters degree in Kuwait University in 2008. Now she is a Health Investigator in Ministry of Health in Kuwait.