

The quality assessment of heavy metals in marine sediments from Usukan coastal beach, Kota Belud, Sabah

ABSTRACT

A total of fifty-three (53) sediment samples were collected from Usukan coastal beach to study the potential of pollution due to heavy metals in the marine ecosystem. The sediment samples were collected along the coastal beach using a core sampler. The ICP-OES analysis was used to identify the concentration of heavy metals in the marine sediment samples. The results of pH analysis showed the increase of pH from 5.69 to 8.48 from inland into the sea. The lowest moisture content was 4.99%, whereas the highest was 48.75%. The organic matter ranges from 0.30 to 6.73%. The sediment texture varies from sandy, sandy loam, and sandy clay loam texture. The decreasing rank in order of heavy metals concentration is Fe (4476-29829 ppm) followed by Al (5803-8524 ppm) and Mn (103-504 ppm), which are still within the background values and standard limits. The assessment of Fe, Al and Mn contamination in sediment samples was performed by comparing with the allowable range of average background values and the standard limits from Sediment Quality Guideline (SQG) in marine sediment. In conclusion, the results of quality assessment using the geoaccumulation index (I_{geo}), contamination factor (CF), modified degree of contamination (mCd), and pollution load index (PLI) showed that the sediment from Usukan beach has a very low contamination level that causes only mild pollution.