

Influential factors on the levels of cation exchange capacity in sediment at Langat river.

Abstract

An exploratory study was carried out at 22 sampling stations along the Langat River, Selangor in order to investigate on the vitality of cation exchange capacity (CEC) in sediment (0–5 cm). Parameters such as pH, Eh, salinity, and electrical conductivity (EC) were determined. The CEC in sediment has been calculated by the determination of Ca^{2+} , Na^{+} , Mg^{2+} , and K^{+} using the flame atomic absorption spectrophotometer, while the organic matter content in sediment was ascertained using the loss on ignition method. The characteristic of the sediment shows that pH (3.09–7.46), salinity (0.02–10.71 ppt), EC (3.39–517 $\mu\text{S}/\text{cm}$) and Eh (–16.20–253.10 mV) were substantially high in variation. This study also revealed that exchangeable Ca^{2+} and Mg^{2+} were controlled by organic matter contents, while exchangeable Na^{+} and K^{+} were influenced by salinity. Salinity was observed to play a major part in controlling all the exchangeable cations, as it gives strong significant correlations with Na^{+} , K^{+} , Mg^{2+} , CEC, and organic matter at $p < 0.01$. The presence of seawater, clay mineralogy, and organic matter proves that it does play an important role in determining the CEC and soon relates to the pollution magnitude in the sediment.

Keyword: Sediment; Cation exchange capacity; Loss on ignition.