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Influences of laterite soil towards physico-chemical properties and heavy metals concentration in urban lake quality index

By: Othman, R (Othman, Rashidi)^[1]; Sulaiman, WSHW (Sulaiman, Wan Syibrah Hanisah Wan)^[1]; Baharuddin, ZM (Baharuddin, Zainul Mukrim)^[1]; Mahamod, LH (Mahamod, Lukman Hakim)^[1]; Hashim, KSHY (Hashim, Khairusy Syakirin Has-Yun)^[1]

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Abstract

The soil is a transmitted agent of water run-off to the water body. Variety of soil type in Malaysia has contributed to the difference of soil properties dissolved in the water and the concern of soil problem in Malaysia involving from laterite, sandy, acid sulfate and organic soil type. Soil properties are one of the subjects of impacting the hydrological composition through transportation of physico-chemicals properties that bring all compound result on water quality. Thus, this research aimed to identify the influences of laterite soil towards physico-chemicals properties and heavy metals concentration in an urban lake. The study was conducted at 10 site studies located at the laterite soil area by evaluating physico-chemical properties and heavy metals concentrations by using inductively coupled plasma mass spectrometry. The results established the significant physico-chemical and heavy metal variables that strongly associated with laterite soil urban lake are high value in biological oxygen demand (62.8 mg/L), chemicals oxygen demand (15.87 mg/L), NH₃-N(0.58 mg/L), total suspended solids (59.27 mg/L), slightly acidic of pH (6.62) and for heavy metals three elements found dominants in water samples such as Fe (0.49 mg/L), Al (0.24 mg/L) and Mn (0.05 mg/L). The laterite soil samples were dominated by clay (36.1%) whereas the composition of heavy metals concentration was found high in Fe (676.25 mg/L), Al (563.13 mg/L), and Mn (1.82 mg/L). The significant outcome of this study can be used as key tools indicator for monitoring urban lakes status and indices.

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Author Information

Reprint Address: Othman, R (reprint author)

[+](#) Int Islamic Univ Malaysia, Dept Landscape Architecture Kulliyyah Architectur, Int Inst Halal Res & Training INHART, Kuala Lumpur 53100, Malaysia.

Addresses:

[+](#) [1] Int Islamic Univ Malaysia, Dept Landscape Architecture Kulliyyah Architectur, Int Inst Halal Res & Training INHART, Kuala Lumpur 53100, Malaysia

E-mail Addresses: rashidi@iiu.edu.my

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