

## **Geochemical distribution of heavy metals in peat soil profile and estimation of water table patterns in peatland at Klias Peninsular, Sabah**

### **ABSTRACT**

The geochemical distribution of heavy metals in peat soil profile and estimation of water table patterns of peatland in oil palm plantation were carried out in the Klias Peninsular West Coast of Sabah. The geological setting of the Klias Peninsular mainly consists of the Crocker Formation and Quaternary Alluvium which is mainly composed of peat soil. The peat soil from 10 sites were collected for the geochemical analysis. The geophysical surveys were performed to measure the water table, which influenced the concentration of trace metals. The geochemical analysis of the peat soil at 0-6m depth shows an acidic pH value (3.0-4.0), moisture content (90%- 1000%) and organic matter content (30-99) %. The texture of the peat soil profile varies from peat at the top of profile to silty clay at the bottom of the peat profile. The result of geochemical analysis shows that the element of Fe has the highest concentration (37.54-2049.18)mg/kg and followed by Zn(5.13-270.06)mg/kg, Mn(0.1-253.56)mg/kg, Pb(0.71-157.46)mg/kg, Cr(0.05- 152.62)mg/kg, Ni(0.1-64.48) mg/kg and Cu(1.81-61.39)mg/kg. The water table ranging from (0.25m-0.3m) induced the oxidation of Fe. The concentration of Fe<sup>2+</sup> tends to absorb other elements such as Zn and Mn. Whereas, the organic matter at pH value (5-5.5) enhanced the absorption of elements Pb, Cr, Ni and Cu in the peat soil profile.