# Assessment of toxicity level in selected heavy metals in volcanic soils from Tawau, Sabah


## Abstract

Heavy metals are one of the serious pollutants in environment because its toxicity. Severe concentration of heavy metals can harm the plants, animals and even human. During the pedogenesis process, heavy metals from the parent rock are mobilized in soils and redistribute in to the environment. The objective of this paper is to study the concentration and toxicity level of selected heavy metals in volcanic soils around Tawau, Sabah. In this study 10 soil samples were collected from different sampling stations. The selection of soil samples were based on the different type of volcanic rocks in the study area. The determination of concentration of heavy metals in soil samples were carried out using X-Ray Fluorescence (XRF) analysis. The result shows, the highest concentration is chromium with the average of 141 ppm followed by zinc with 112 ppm. The concentration of copper is 49 ppm, nickel 15 ppm, lead 8 ppm and arsenic 7 ppm. The soil samples is identified as polluted due to the elevated concentration of certain heavy metals when compared with the Sediment Quality Guidelines of US EPA. Chromium is regarded as heavily polluted agent while zinc, copper and arsenic indicated that the area is moderately polluted. Nickel and lead average concentration show no indication of pollution in the area. It is concluded that the combined source of heavy metals in the study area would be the parent materials of the soils and other anthropogenic effluent. From the study also, it is found out that pH value, organic matter and clay percentage has influenced the heavy metal concentration in volcanic soil in the study area.