

## **Health risk assessment on bioavailability of heavy metals in Klang district urban surface soil**

### **Abstract**

**Background:** The aim of this study was to determine bioavailability heavy metal concentrations of Cu, Cd, Cr, Co and Zn and health risk assessment in different types of Klang district, Selangor (Malaysia) urban surface soil using in Physiologically Based Extraction Test in vitro human digestion model. **Methods:** A total of 76 urban surface soil was sampled based on seven different types of land use, namely, industrial, residential, agriculture, town area, port, school and mangrove. For bioavailability of heavy metal concentration, the soil solution was analysed using Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES). **Results:** Heavy metal concentrations for this study were in the following order: Zn, Cu, Co, Cd and Cr. Results of bioavailability heavy metal concentration from ICP-OES was used to establish Hazard Quotient in order to determine non-cancer risk. The results of Hazard Quotient are  $< 1$  for all surface soil samples. **Conclusion:** All the soil samples in Klang district are safe from the non-cancer risk to human.

**Keyword:** Heavy metal; Bioavailability; Health risk assessment