

Heavy metals in soil of the tropical climate bauxite mining area in Malaysia

ABSTRACT

Deposited soil around the stockpile and bauxite mining area in Kuantan, Pahang, Malaysia was measured for heavy metal contents with X-ray fluorescence (XRF) technique and 36 elements were detected. The concentrations of non-carcinogenic elements in descending order are: iron (Fe) > silicon (Si) > titanium (Ti) > calcium (Ca) > manganese (Mn) > barium (Ba) > molybdenum (Mo) > zinc (Zn) > mercury (Hg). Carcinogenic elements were chromium (Cr) > nickel (Ni) > lead (Pb) > arsenic (As) > cadmium (Cd) > selenium (Se). Other traces elements with prominent value were praseodymium (Pr) > vanadium (V) > cerium (Ce) > neodymium (Nd) > hafnium (Hf) > and yttrium (Y). These elements were mainly derived from the crustal mineral, mine waste or residues as well as dust and aerosol emission from the extraction, transportation and deposited of soil particles in the mining area.

Keyword: Bauxite; Heavy metals; Mining; Soil; XRF; Carcinogenic elements