Spatial Prediction of Heavy Metal Pollution for Soils in Coimbatore, India based on universal kriging

Abstract

Industrialization and urbanization taking place at faster rate in Coimbatore city. Hence the discharge rate of industry effluents and wastes are increasing at alarming rate. These effluents and wastes are being discharged randomly on soil, river, lake and road side without any treatment. They pollute productive soil, natural water system as well as ground water.
Assessment of heavy metal content in soil and wetland from various localities of Coimbatore, Tamil Nadu was undertaken. Heavy metal pollution generally a non-stationary variable, the technique of universal kriging is applied in preference to ordinary kriging as the interpolation method. Topsoil samples (0-20 cm) were taken at various locations with reference to latitude and longitude. The concentration of heavy metal Cr, Pb, and Fe were analyzed in the Atomic Absorption spectrometer. Universal Kriging model was developed with suitable empirical semivariogram model. The model having the least error was selected by comparing the observed table values with the values predicted by empirical semivariogram models. It was determined that the presence of Fe is high at Electroplating Industrial areas and traffic junctions. Presence of Pb is high in Velangulam Lake Ukkadam, and at the Sungam Lake. Presence of Cr is high at Ganapathy and X - cut road and is 3.6 & 3.5 ppm respectively because of electroplating industries. The aim of this analysis is to investigate the level of heavy metal contamination in soil and prediction of heavy metal at various locations in the vicinity of industries and around Coimbatore city.

Reference

- Kumar, V. (1996) Space time modelling of ground water with assistance of remote sensing, Ph.D., Indian Institute of Technology, New Delhi, India.

Index Terms

Computer Science

Data Mining
**Key words**

Spatial analysis                     Heavy metals

Geo-accumulation

Universal kriging

Semivariogram

Soil pollution