

## **GEOCHEMISTRY OF RAINWATER IN AND AROUND KOCHI (COCHIN): AN INDUSTRIAL BELT OF KERALA, INDIA**

K .N. Krishnakumar <sup>1</sup>and B. R. Manjunatha <sup>2</sup>

<sup>1</sup>*Department of Geology, University of Kerala, Thiruvananthapuram, Kerala, India.*

<sup>2</sup>*Department of Marine Geology, Mangalore University, Mangalore, Karnataka, India.*

### **Abstract**

This study was conducted to quantify the migration of elements from the atmosphere by wet precipitation and the influence of anthropogenic activities on it. In the present investigation monthly rainfall samples (N=120) were collected during the years 1999, 2000 and 2001 from ten stations using bulk precipitation collector (Avila, 1996) was analyzed for physical and chemical characteristics to know the temporal variability. The analysis was done using Atomic Absorption Spectroscopy, Ion Chromatography and ICP-AES. Generally pH values of rain water samples fall in the range of 3.7 to 8.6 with a mean of 5.5 and standard deviation of 1.19. The analysis of rain water indicates that the depositional fluxes of almost all ions including H<sup>+</sup> were appreciably higher during summer monsoons. The depositional fluxes of H<sup>+</sup> in the study area are considerably higher by factors of 2 to 19. The fallout of acid rains was recorded at many stations due to the relative dominance of anions over cations and anthropogenic contribution of acidic species. The seasonal/inter annual variations of trace elements are quite uniform suggesting that atmospheric fluxes are significant in the area of investigation. This is probably one of the important sources for maintaining the high biological productivity along the Eastern Arabian Sea almost throughout the year.

Keywords: Acid neutralization capacity, anthropogenic activities, cochin, major ions, Depositional fluxes, non sea-salt elements.