Composition of Rain Water in Agra City, a Semi Arid Area in India

Rohi Jan¹, Atar Singh Pipal¹ and Ajay Taneja^{1,2}

¹Department of Chemistry, Institute of Basic Sciences, Dr. B.R Ambedkar University, Agra 282002, India.

²School of Chemical Sciences, Department of Chemistry, St. John's College, Agra 282002, India

Wet deposition process is an efficient pathway for removing the gases and particles from the atmosphere to the biosphere. It also play significant role in controlling the concentration of these species. Rain water samples were collected at St. John's crossing during the monsoon period. The cations $(Ca^{2+}, Mg^{2+}, Na^+, K^+ \text{ and } NH_4^+)$ and anions $(F^-, Cl^-, HCO_3^-, NO_3^- \text{ and } SO_4^-)$ along with pH were measured. The percentage contribution of soil components $(Ca^{2+}, Mg^{2+}, Na^+ \text{ and } NH_4^+ \text{ are observed to be higher than the acidic substances. The ratio of <math>F^-/Ca^{2+}, Mg^{2+}/Ca^{2+}, Na^+/Ca^{2+} \text{ and } NO_3^-/Ca^{2+} \text{ in rain water samples indicate that local soil plays a significant role in precipitation Chemistry. Hence, soil dust is responsible for neutralization of wet deposition. The data were also subjected to factor analysis based on principle component analysis. Factor analysis also indicates that the soil as well as dust emission is major contributor to rain water composition.$