Application of Multivariate Statistical Techniques in the Assessment of Groundwater Quality in Chrompet Industrial Area, Chennai

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Abstract : Multivariate statistical techniques such as factor analysis (FA) and cluster analysis (CA) were applied for the evaluation of spatial variations and the interpretation of a large complex water quality data set of Chrompet in Chennai, Tamil Nadu. 11 parameters of water samples collected from 16 different sampling stations of city was determined. Factor analysis indicates three factors in pre monsoon and four factors in post monsoon, which explained 76.106% and 84.064% respectively of the total variance in water quality data set. Hierarchical cluster analysis grouped 16 sampling stations of city into two clusters, i.e., moderately polluted (MP) and highly polluted (HP) sites, based on the similarity of water quality characteristics. This study illustrates the benefit of multivariate statistical techniques for interpreting complex data sets in the analysis of spatial variations in water quality, and to plan for future studies.

Keywords : Factor analysis; cluster analysis; ground water; Chrompet.

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