

Chemometric analysis of drinking water quality parameters of Sagar city, Madhya Pradesh, India

Hemant PATHAK*

Department of Chemistry, Indira Gandhi Government Engineering College, Sagar, Madhya Pradesh, India

Abstract. The present study uses numerous chemometric techniques to evaluate and interpret a water quality data obtained from the drinking water resources namely municipal water (supplied by Rajghat dam on Bewas River), bore well, ground water of Sagar city, a divisional headquarter of Madhya Pradesh, India. Data was collected from May 2018 to June 2019 for 10 parameters used to assess the status of the water quality. Water quality was monitored at 15 sampling stations along the entire district. The data were analyzed using chemometric analysis such as principal component analysis, correlation matrix, multivariate linear regression analysis and hierarchical cluster analysis that reduced the data dimensions for better interpretation. Results of statistical analysis expressed that slightly higher value of BOD in some areas due to sewage contamination, need of chlorination treatment required at those places. This study also presents the value of diverse statistical methods for assessment and analysis of drinking water quality data for the reason of monitoring the effectiveness of water resource management. The study indicated that the maximum quality parameters of drinking water is in permissible limits of WHO and IS: 10500 guidelines on entire study places.

Keywords: chemometric analysis; correlation matrix; principal component analysis; multivariate linear regression.

*E-mail address: hemantp1981@yahoo.co.in