Study of water quality in Hindon River using pollution index and environmetrics, India

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ABSTRACT

The River Hindon, a main tributary of river Yamuna flows in the western part of Uttar Pradesh (UP), India. As it passes through the industrial and urban areas, it receives a huge amount of wastages. Therefore, the present study is concerned with the assessment of water quality of the river in 28 sampling sites using the comprehensive pollution index (CPI), considering the eleven physiochemical parameters such as biological oxygen demand, dissolved oxygen, total dissolve solids, total phosphate and four heavy metals (Fe, Cu, Zn and Cr). Besides this, a multivariate statistical analysis is also performed using water quality parameters to validate the results. The CPI was found to be 2.68–7.12 (CPI > 2), which is an indication of severely polluted water of Hindon river. The result reveals that water of the Hindon River is unfit for human use, irrigation and other life supporting activities which are mainly on account of direct discharge of untreated wastewater by industries and municipal sources. This study also illustrates that principal component analysis and cluster analysis is an important statistical tool for better management of water quality monitoring system.

Keywords: River Hindon; CPI; PCA; CA; Water quality

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