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An Investigation of Surface Water Quality in an Industrial Area Using Integrated Approaches

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Abstract : Rapid urbanization and industrialization has increased the pollution load in surface water bodies. However, these water bodies are major source of water for drinking, irrigation, industrial activities and fishery. Therefore, water quality assessment is paramount importance to evaluate its suitability for all these purposes. This study focus to evaluate the surface water quality of an industrial city in eastern India through integrating interdisciplinary techniques. The multi-purpose Water Quality Index (WQI) assess the suitability for drinking, irrigation as well as fishery of forty-eight sampling locations, where 8.33% have excellent water quality (WQI:0-25) for fishery and 10.42%, 20.83% and 45.83% have good quality (WQI:25-50), which represents its suitability for drinking irrigation and fishery respectively. However, the industrial water quality was assessed through Ryznar Stability Index (LSI), which affirmed that only 6.25% of sampling locations have neither corrosive nor scale forming properties (RSI: 6.2-6.8). Integration of these statistical analysis with geographical information system (GIS) helps in spatial assessment. It identifies of the regions where the water quality is suitable for its use in drinking, irrigation, fishery as well as industrial activities. This research demonstrates the effectiveness of statistical and GIS techniques for water quality assessment.

Keywords : surface water, water quality assessment, water quality index, spatial assessment
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