Spatial distribution of micronutrients in Pekalongan coastal waters: water quality and environmental impact assessment

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Abstract	The coastal areas of Pekalongan, which are densely populated with activities such as ports, industries, and settlements, are highly vulnerable to changes in water quality due to nutrient distribution. This study aims to explore the distribution patterns and abundance of micronutrients in Pekalongan coastal and their implications for water quality and environmental impacts. Samples were taken from Mrican River, Pencongan River, and Wonokerto Beach. The analysis involved spatial distribution, statistical tests with Principal Component Analysis (PCA), and water quality assessment using CCME-WQI. The results showed that the highest concentrations of micronutrients were found in iron in RW 6 of Mrican River, copper in SW 4 of Wonokerto Beach, and zinc in SW 5 of Wonokerto Beach. Based on the CCME-WQI, the quality of Pekalongan coastal waters is classified as poor, potentially posing a great risk to aquatic biota and the health of humans who consume polluted biota. These findings underscore the urgency of taking mitigation measures against micronutrient contamination in coastal areas.Keywords:Pekalongan CoastSpatial DistributionMicronutrientWater QualityCoastal Waters
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