

INTISARI

Kualitas air di suatu sungai sangat dipengaruhi oleh kondisi wilayah dan aktivitas masyarakat yang ada di sekitarnya. Berbagai metode indeks kualitas air telah dibuat untuk menilai kondisi kualitas air di suatu perairan. Penelitian ini bertujuan untuk menganalisis perubahan kualitas air di Sungai Winongo pada sebelum dan sesudah Covid-19 sekaligus membandingkan hasil status mutu air menggunakan metode indeks kualitas air yang berbeda, yaitu metode Indeks Pencemaran (IP) dan metode Indeks Kualitas Air Modifikasi Indonesia (IKA-INA).

Penelitian ini menggunakan 10 parameter, yaitu TSS, TDS, pH, DO, BOD, COD, nitrat, amonia, fosfat, dan koli tinja. Variasi penggunaan jumlah parameter dengan menghilangkan parameter amonia dan fosfat juga digunakan untuk melihat pengaruh penggunaan jumlah parameter yang berbeda terhadap perubahan hasil indeks kualitas air. Status mutu air dari metode Indeks Pencemaran (IP) dan metode Indeks Kualitas Air Modifikasi Indonesia (IKA-INA) diselaraskan agar lebih mudah untuk dilakukan perbandingan. Beberapa uji statistik, seperti uji t berpasangan, uji Friedman, dan uji Wilcoxon dilakukan untuk melihat adanya perbedaan di antara hasil indeks dan status mutu air dari kedua metode.

Hasil penelitian menunjukkan bahwa terdapat perbedaan nilai IP dan IKA-INA pada sebelum dan sesudah Covid-19. Penghilangan parameter amonia dan fosfat menyebabkan adanya perbedaan hasil pada metode IKA-INA. Terdapat perbedaan hasil status mutu air yang diberikan oleh metode IP dan IKA-INA. Hasil status mutu air “cukup baik” hingga “buruk” yang diberikan oleh metode IP terutama di wilayah perkotaan dinilai lebih sesuai dengan kondisi lapangan berdasarkan penggunaan lahan di sekitar sungai daripada metode IKA-INA yang banyak memberikan status mutu air “baik” hingga “cukup baik” di lokasi tersebut.

Kata Kunci : Indeks Kualitas Air, Indeks Pencemaran (IP), Indeks IKA-INA, Status Mutu Air, Variasi Jumlah Parameter

ABSTRACT

Water quality in a river is strongly influenced by regional conditions and surrounding human activities. Various water quality index methods have been developed to assess the status of water quality in aquatic systems. This study aims to analyze changes in water quality in the Winongo River before and after the Covid-19 pandemic, as well as to compare water quality status results using different water quality index methods, namely the Pollution Index (IP) and the Modified Indonesian Water Quality Index (IKA-INA).

This research employed 10 parameters: TSS, TDS, pH, DO, BOD, COD, nitrate, ammonia, phosphate, and fecal coliform. Variations in the number of parameters were also applied by excluding ammonia and phosphate to examine the effect of parameter reduction on the resulting water quality index. The water quality status derived from the Pollution Index (IP) and the Modified Indonesian Water Quality Index (IKA-INA) was standardized to facilitate comparison. Several statistical tests, including paired t-test, Friedman test, and Wilcoxon test, were conducted to evaluate differences between the indices and their resulting water quality status.

The findings indicate that there were significant differences in IP and IKA-INA values before and after the Covid-19 pandemic. The exclusion of ammonia and phosphate parameters led to variations in the IKA-INA method outcomes. Moreover, discrepancies were observed in the water quality status determined by the IP and IKA-INA methods. The water quality status ranging from “fair” to “poor” produced by the IP method—particularly in urban areas—was considered more consistent with field conditions based on land use surrounding the river, compared to the IKA-INA method, which more frequently yielded “good” to “fair” status in the same locations.

Keywords : Water Quality Index, Pollution Index (IP), IKA-INA Index, Water Quality Status, Parameter Variation