KUALITAS AIR SUNGAI BENGAWAN SOLO AKIBAT LIMBAH CAIR SENTRA INDUSTRI BATIK DI KECAMATAN MASARAN DAN PLUPUH KABUPATEN SRAGEN

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INTISARI

Sungai Bengawan Solo merupakan sungai terpanjang di Pulau Jawa yang melintasi Kabupaten Sragen, termasuk wilayah Kecamatan Masaran dan Plupuh yang merupakan sentra industri batik. Lokasi industri yang berdekatan dengan sungai menyebabkan adanya pembuangan limbah cair industri batik ke badan air. Penelitian ini bertujuan untuk menganalisis kualitas air limbah batik, kualitas air penggal Sungai Bengawan Solo, dan menentukan status mutu air akibat aktivitas pembuangan limbah tersebut.

Pengambilan sampel dilakukan pada sembilan titik yang mencakup IPAL batik, saluran drainase, serta badan air sebelum dan sesudah adanya pembuangan limbah batik. Parameter yang dianalisis meliputi suhu, pH, DO, BOD_5, COD, TSS, fenol total, khrom total (Cr), amoniak total (NH_3-N), sulfida (sebagai S), serta minyak dan lemak. Data hasil pengukuran kualitas air limbah batik dibandingkan dengan baku mutu yang terdapat pada Perda Jateng No. 5 Tahun 2012, sedangkan kualitas air sungai dibandingkan dengan baku mutu air sungai kelas 2 PP No. 22 Tahun 2021. Selain itu, hasil pengukuran kualitas air sungai juga digunakan untuk menentukan status mutu air menggunakan metode WAWQI.

Hasil analisis menunjukkan bahwa nilai pH, BOD_5, dan COD pada limbah batik melebihi baku mutu yang ditetapkan dalam Perda Jateng No. 5 Tahun 2012, sedangkan pada sampel air sungai nilai BOD_5, COD, dan amoniak total melebihi baku mutu air sungai kelas 2 PP No. 22 Tahun 2021. Penilaian status mutu air menggunakan metode WAWQI menunjukkan bahwa seluruh titik sampel berada dalam kategori tidak layak untuk air minum dan budidaya ikan dengan nilai indeks berkisar antara 185–393. Nilai indeks tertinggi (393,91) terdapat pada titik 4 yang berada setelah saluran pembuangan IPAL 3 dan memiliki kepadatan industri batik yang tinggi di sekitarnya.

Kata Kunci: Kualitas air, limbah cair batik, Sungai Bengawan Solo, WAWQI, pencemaran air

WATER QUALITY OF THE BENGAWAN SOLO RIVER DUE TO WASTEWATER DISCHARGE FROM BATIK INDUSTRY CENTERS IN MASARAN AND PLUPUH DISTRICTS, SRAGEN REGENCY

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ABSTRACT

Bengawan Solo River is the longest river on the island of Java, passing through Sragen Regency, including the Masaran and Plupuh Districts, which are known as centers of batik industry. The proximity of these industrial areas to the river has led to the discharge of batik wastewater into the water body. This study aims to analyze the quality of batik wastewater, the water quality of a segment of the Bengawan Solo River, and to determine the water quality status as a result of the wastewater discharge activities.

Sampling was conducted at nine points, covering IPAL batik, drainage channels, and river segments before and after the discharge points. The parameters analyzed included temperature, pH, DO, BOD_5, COD, TSS, total phenol, total chromium (Cr), total ammonia (NH_3-N), sulfide (as S), and oil and grease. The wastewater quality data were compared to the quality standards set in Central Java Regional Regulation No. 5 of 2012, while the river water quality was compared to Class II river water standards as stated in Government Regulation No. 22 of 2021. In addition, the river water quality data were used to assess water quality status using the WAWQI method.

The results showed that pH, BOD_5, and COD values in batik wastewater exceeded the quality standards set by Central Java Regional Regulation No. 5 of 2012. In river water samples, BOD_5, COD, and total ammonia values exceeded the Class II river water quality standards regulated by Government Regulation No. 22 of 2021. The assessment of water quality status using the WAWQI method indicated that all sampling points fell into the category of unfit for drinking water and aquaculture, with index values ranging from 185 to 393. The highest index value (393,91) was recorded at Point 4, located downstream of IPAL 3 discharge channel, which is surrounded by a high density of batik industries.

Keywords: Water quality, batik wastewater, Bengawan Solo River, WAWQI, water pollution