

ABSTRAK

Latar Belakang - Kabupaten Purbalingga merupakan salah satu sentra industri rambut palsu (*wig*) dan bulu mata (*eyelash*) terbesar di Jawa Tengah. Kromium (Cr) digunakan sebagai pewarna rambut. Sebagian industri belum memiliki instalasi pengolahan air limbah (IPAL) yang memadai. Ada suatu kasus yang pernah terjadi banyak ikan mati di kolam warga yang airnya berasal dari air sungai sekitar industri.

Tujuan - Menganalisis kualitas air sungai di sekitar industri ditinjau dari parameter BOD, COD, TSS, Cr(VI) dan akumulasi Cr(VI) pada ikan lele (*Clarias batrachus*) serta mengetahui keluhan kesehatan masyarakat setempat.

Metode - Penelitian ini merupakan penelitian observasional, dengan disain *cross sectional*. Populasi penelitian ini adalah air sungai dan ikan lele yang dipelihara berada di sungai sekitar industri. Sampel ditentukan berdasarkan titik lokasi pengambilan yang dibagi menjadi 5 stasiun. *One way-anova* digunakan untuk uji perbedaan parameter BOD, COD, TSS dan Cr(VI). Uji Korelasi Pearson untuk mengetahui hubungan linear BOD, COD dan TSS. Regresi linear digunakan untuk mengetahui faktor pengaruh akumulasi Cr(VI) pada ikan lele. Semua uji menggunakan taraf signifikan $\alpha = 0,05$.

Hasil - Konsentrasi BOD, COD dan Cr(VI) ternyata melebihi baku mutu sungai kelas III, sedangkan konsentrasi TSS masih berada di bawah baku mutu. Konsentrasi Cr(VI) dalam organ ikan (insang, hati dan daging) melebihi ambang batas yang ditentukan oleh WHO/FAO yaitu maksimum sebesar 0,52 mg/kg. Uji *One way-anova* menunjukkan adanya perbedaan ($p < 0,05$) antara BOD dan COD. Uji korelasi Pearson menunjukkan hubungan yang positif ($p < 0,05$), sedangkan regresi linear menunjukkan bahwa Cr(VI) dalam air memberikan pengaruh ($p < 0,05$) terhadap akumulasi Cr(VI) pada insang ikan lele.

Kesimpulan - Konsentrasi BOD, COD dan Cr(VI) melebihi baku mutu, sehingga dapat disimpulkan bahwa air sungai tercemar zat organik dan logam berat. Ada perbedaan kadar BOD dan COD. Hubungan antara kadar BOD, COD dan TSS menunjukkan hubungan linear positif. Konsentrasi Cr(VI) mempengaruhi akumulasi Cr(VI) pada insang ikan lele. Masyarakat sekitar sungai dekat industri mengeluhkan bau menyengat yang menyebabkan pusing, sedangkan beberapa petani mengalami iritasi kulit.

Kata kunci: limbah industri, kualitas air sungai, kadar Cr(VI), ikan lele

ABSTRACT

Background – Purbalingga is one of the largest industrial centers of wig and eyelashes in Central Java. Hair production processed using Chromium (Cr) as a dye. Most of the industry haven't had adequate waste water treatment. There is a case ever happened where there are many fish found dead in the pond where the water comes from the river around the industry.

Objective - This study aimed to analyze the quality of river water around the industry in terms of the parameters are BOD, COD, TSS, Cr(VI) and accumulation of Cr(VI) in catfish (*Clarias batrachus*) and to know the local community health complaints.

Method – This study was an observational with cross sectional design. The study population was river and catfish are farmed in the rivers around the industry. The sample is determined based on the location of the point which is divided into five stations. One-way ANOVA was used to difference test of BOD, COD, TSS and Cr (VI). Pearson correlation test to determine the linear relationship BOD, COD and TSS. Linear regression was used to determine the effect of the accumulation of Cr (VI) in catfish. All of the tests using confident interval $\alpha = 0,05$.

Result – Concentrations of BOD, COD and Cr (VI) exceeded the third class quality standard, while the TSS concentration is still below the quality standard. Cr (VI) in the organs of fish (gills, liver and meat) still exceeds the threshold defined by the WHO / FAO which is a maximum of 0,52 mg/kg. One Way-ANOVA test showed a difference ($p < 0,05$) between the BOD and COD. Pearson correlation test showed a positive correlation ($p < 0,05$). While the linear regression showed that Cr (VI) in water to give effect ($p < 0,05$) against the accumulation of Cr (VI) on the gills of catfish.

Conclusion - Concentrations of BOD, COD and Cr (VI) exceed the quality standards that indicate polluted river by water organic substances. There are differences in the levels of BOD and COD. Relations BOD, COD and TSS showed a positive linear relationship. Cr (VI) affect the accumulation of Cr (VI) on the gills of catfish. Communities around the river complaining the stink of waste industry that causes dizziness whereas some farmers have skin irritation.

Keywords: industrial waste, water quality, levels of Cr (VI), catfish