

INTISARI

Tujuan penelitian adalah menganalisis kemampuan kitosan pelapis arang aktif tempurung kelapa dalam mengadsorpsi Cr (total), BOD, COD, dan TSS pada limbah cair industri penyamakan kulit tanpa IPAL. Pengambilan sampel air sungai menggunakan metode *Purposive Sampling*, yang dianalisis perubahan mutu air sungai yaitu parameter fisik, parameter kimia pada titik sampel yang telah ditentukan, sedangkan metode pengambilan sampel limbah cair menggunakan *Stratified Random Sampling*. Hasil penelitian menunjukkan: 1). Terjadi pencemaran air sungai pada sebagian titik pengambilan sampel. Parameter yang dominan tercemar dan konsentrasinya melampaui Baku Mutu Air Kelas II adalah: Cr (total), BOD, COD, DO, dan TSS. Pencemaran terjadi pada titik pengambilan sampel (Q3) baik sampel yang diambil tanggal 19 Maret 2010 (musim hujan) maupun pada tanggal 10 September 2010 (musim kemarau); 2). Adsorpsi Cr (total) oleh adsorben Kitosan pelapis arang aktif tempurung kelapa optimum pada pH 4, jumlah dengan nilai sebesar 98,78 % (adsorben A); 99,06% (adsorben B); 99,19% (adsorben C), waktu interaksi optimum pada waktu 60 menit. Hasil uji statistik Oneway Anova, Cr (total) signifikan pada 5% ($p < 0,05$) maka variasi pH dan waktu interaksi berpengaruh terhadap adsorpsi Cr (total); 3). Adsorpsi terhadap BOD optimum pada pH 6 dengan nilai sebesar 99,3% (adsorben A); 99,4 % (adsorben B); 99,5% (adsorben C), waktu interaksi optimum pada waktu 50 menit. Hasil uji statistik Oneway Anova, BOD signifikan pada 5% ($p < 0,05$) maka variasi pH dan waktu interaksi berpengaruh terhadap adsorpsi BOD; 4). Adsorpsi terhadap COD optimum pada pH 1, nilai sebesar 98,43% (adsorben A); 98,44% (adsorben B); 98,47% (adsorben C), waktu interaksi optimum pada waktu 50 menit. Hasil uji statistik Oneway Anova, COD signifikan pada 5% ($p < 0,05$) maka variasi pH dan waktu berpengaruh terhadap adsorpsi COD; 5). Adsorpsi terhadap TSS optimum pada pH 1, dengan nilai 98,8% (adsorben A); 98,9 % (adsorben B); 99,1% (adsorben C), waktu interaksi optimum pada waktu 50 menit. Hasil uji statistik Oneway Anova, TSS signifikan pada 5% ($p < 0,05$) maka variasi pH dan waktu berpengaruh terhadap adsorpsi TSS.

Kata kunci: adsorben, kitosan pelapis arang aktif, baku mutu air, baku mutu limbah cair

ABSTRACT

The main of the research was to analyze the ability of chitosan coated the coconut shell activated charcoal in the adsorbed Cr (total), BOD, COD, and TSS to leather tanning wastewater without IPAL. The research show that: 1) Gajahwong river water pollution in most of the sampling point. Water quality parameters Gajahwong river which is dominant contaminated and its concentrations exceed the Water Quality Standard Class II are: Cr (total), BOD, COD, DO, and TSS. The contamination occurs at the sampling point (Q3) either the sample which is taken on March 19th, 2010 (rainy season) or the sample is taken on September 10th, 2010 (dry season); 2) Adsorption of Cr (total) by coated the adsorbent chitosan coconut shell active charcoal optimum at pH 4 by the amount of Cr (total) 98.78% adsorbed (adsorbent A); 99.06% (adsorbent B); 99.19% (adsorbent C), optimum interaction time of 60 minutes. Oneway ANOVA, statistical test results, the variable Cr (total) significant at 5% ($p < 0.05$), the variation of pH and time interaction effect on the adsorption of Cr (total); 3) Adsorption of the BOD by chitosan coated the coconut shell active charcoal optimum at pH 6 with the amount adsorbed BOD 99.3% (adsorbent A); 99.4% (adsorbent B); 99.5% (adsorbent C), with optimum interaction time during the 50 minutes. Oneway ANOVA statistical test results, calculations BOD variables significant at the 5% ($p < 0.05$), the variation of pH and time interaction effect on the adsorption of BOD; 4) Adsorption of the COD by chitosan coated the coconut shell active charcoal optimum at pH 1 with a COD amount adsorbed 98,43% (adsorbent A); 98,44% (adsorbent B); 98,47% (adsorbent C), with optimum interaction time during the 50 minutes. Oneway ANOVA statistical test results, COD variables significant at the 5% ($p < 0.05$), the variation of pH and time affect the adsorption of COD; 5) Adsorption on Chitosan coated the TSS by coconut shell active charcoal optimum at pH 1 with a number of TSS terdsorpsi 98.8% (adsorbent A); 98.9% (adsorbent B); 99.1% (adsorbent C), with optimum interaction time during the 50 minutes. Oneway ANOVA statistical test results, TSS variable is significant at the 5% ($p < 0.05$), the time variation of pH and adsorption effect on TSS.

Keywords: adsorbent, chitosan coated activated charcoal, water quality standard, wastewater standard