

Pengendalian Pencemaran Limbah Cair Industri Batik terhadap Airtanah di Kalurahan Ngentakrejo, Kapanéwon Lendah, Kabupaten Kulonprogo, Daerah Istimewa Yogyakarta

Oleh

Muhammad Rusli Mushlich
114160040

INTISARI

Daerah Kalurahan Ngentakrejo Kapanéwon Lendah, Kabupaten Kulonprogo memiliki beberapa industri batik yang salah satunya diketahui tidak melakukan pengolahan terhadap air buangan limbah cair sehingga berpotensi mencemari airtanah di sekitarnya. Tujuan dari penelitian ini adalah mengidentifikasi karakteristik air tanah dan air limbah, menganalisis status mutu air tanah dengan metode Indeks Pencemaran, merancang desain Instalasi Pengolahan Air Limbah (IPAL) sebagai arahan pengolahan limbah cair industri batik serta mengetahui efektivitas rancangan desain IPAL dengan menggunakan *Jar test*.

Metode pengumpulan data (kondisi geofisik kimia) yang digunakan adalah metode survei lapangan dan pemetaan. Penentuan status mutu air tanah dilakukan dengan menggunakan metode Indeks Pencemaran. Analisis kualitas air tanah dan air limbah dilakukan dengan metode uji lab. Pengambilan sampel air tanah dilakukan dengan metode *purposive sampling* sesuai arah aliran airtanah. Pada penelitian ini dilakukan juga percobaan untuk pengolahan air limbah cair industri batik dengan menggunakan metode *constructed wetland* dengan tanaman bambu air (*Equisetum hyemale*). Percobaan dilakukan dengan menggunakan beberapa variasi yaitu variasi waktu tinggal dan jumlah tanaman.

Dari hasil penelitian diketahui bahwa karakteristik limbah cair industri batik yang dihasilkan di lokasi penelitian hampir semuanya melebihi baku mutu yang digunakan dengan nilai BOD tertinggi 21925 mg/L, COD tertinggi 6280 mg/L, TSS tertinggi 1004 mg/L dan krom 0,0102 mg/L. Status mutu airtanah di lokasi penelitian diketahui memiliki nilai 3,459 ; 3,972 dan 4,446 yang masuk kedalam kategori tercemar ringan. Arahan pengelolaan yang disarankan pada penelitian ini adalah dengan membuat unit Instalasi Pengelolaan Air Limbah (IPAL) yang terdiri dari unit koagulasi-flokulasi-sedimentasi dan unit pengolahan lahan basah buatan.

Kata Kunci: Limbah Cair Industri Batik; Pencemaran Air Tanah; Indeks Pencemaran; Status Mutu Air; Instalasi Pengelolaan Air Limbah

Pollution Control of Batik Industry Wastewater on Groundwater in Ngentakrejo Village, Lendah District, Kulonprogo Regency, Special Region of Yogyakarta

by

**Muhammad Rusli Mushlich
114160040**

ABSTRACT

The area of Ngentakrejo Village, Lendah Sub-district, Kulonprogo Regency has several batik industries, one of which is known to not treat waste water so that it has the potential to pollute the surrounding groundwater. The purpose of this study was to identify the characteristics of groundwater and batik industrial wastewater, analyze the status of groundwater quality using the Pollution Index method, and to design a Wastewater Treatment Plant (IPAL) design as a direction for treating batik industrial wastewater.

*Data collection methods (for geophysical & chemical conditions) used are field survey and mapping methods. Determination of groundwater quality status is carried out using the Pollution Index method. Analysis of groundwater and wastewater quality was carried out using the laboratory test method. Groundwater sampling was carried out by purposive sampling method according to the direction of groundwater flow. In this study, experiments were also conducted for the wastewater treatment of the batik industry using the constructed wetland method with water bamboo plants (*Equisetum hyemale*). Experiments were carried out using several variations, namely variations in detention time and number of plants.*

From the results of the research, it is known that the characteristics of the batik industry wastewater generated at the research location almost all exceed the quality standards used with the highest BOD value of 21925 mg/L, the highest COD 6280 mg/L, the highest TSS 1004 mg/L and highest chromium at 0.0102 mg/L. The status of groundwater quality at the research site is known to have a value of 3,459; 3,972 and 4,446 which are categorized as lightly polluted. The batik industrial wastewater tested was proven to exceed the quality standard on the BOD and TSS parameter parameters. The recommended management direction in this study is to create a Wastewater Management Installation unit (IPAL) consisting of a coagulation-flocculation-sedimentation unit and an constructed wetland treatment unit.

Keywords: *Batik Industry Liquid Waste; Groundwater Pollution; Pollution Index; Water Quality Status; Wastewater Management Installation;*