

THE EFFECT OF LIQUID WASTE DISPOSAL OF COMMUNAL BATIK INDUSTRY TO THE UNCONFINED AQUIFER WATER QUALITY

(A Case Study in Wijirejo Village, Pandak Sub-District, Bantul Regency, Daerah Istimewa Yogyakarta Province)

Abstract

Since 1980's, Wijirejo village known as a batik central. This batik industry produces a huge number of liquid wastes which can contaminate the groundwater if they are discarded into the open canal and the river. The batik industry liquid wastes are easy to recognize from the color of the stain material. Then the liquid wastes which contain heavy metal and organic chemicals from the open canal and the river can contaminate the people wells.

The research methodologies in this research were survey method and laboratory analysis. The survey method was used during the observation and the field measurement. Therefore, the laboratory analysis was used through the ground water sample analysis. There were two research parameters, physical parameter and chemical parameters which consist of: physical parameters (temperature, TSS, TDS) and chemicals (pH, BOD, COD, Cu, Pb, Cd, Total Cr, and Sulfide). The regulation which used as the basic reference was *Peraturan Gubernur Daerah Istimewa Yogyakarta No. 20 tahun 2008 tentang Baku Mutu Air di Provinsi Daerah Istimewa Yogyakarta*.

Based on the laboratory analysis, there were some groundwater samples parameters which over the standard quality. The temperature indicate the groundwater temperature were at 24,6–25,4 °C which was below the standard quality. The TSS was at 1-5 mg/l with 0 mg/l as the standard quality and nine samples upper the standard quality. The TDS was at 177–380 mg/l with 1000 mg/l as the standard quality. The TDS was under the standard quality. Whereas the pH in the normal condition were at 6,8–7,6 where the standard quality at 6–9. The BOD was around 8–17 mg/l with 10 mg/l as the standard quality. The BOD was over the standard quality for all samples, whereas there were two samples with under the COD standard quality. The Cu in the groundwater samples were around < 0,0098–0,036 mg/l with 0,02 mg/l as standard quality, and there were 4 samples which over the standard quality. The Pb in the groundwater samples were around < 0,0093–0,042 mg/l with 0,03 mg/l as the standard quality. The Cd in the groundwater samples were around < 0,0015–0,024 mg/l with 0,01 mg/l as the standard quality. The Cr in the groundwater samples were around < 0,0126–0,054 mg/l with 0,05 mg/l as the standard quality. There were two groundwater samples which were over the standard quality and contaminated by Pb, Cd, and Cr Total, whereas the sulfide parameter were not detected in all groundwater samples.

Keywords : batik industry, liquid waste, contamination, unconfined aquifer, standard quality

PENGARUH PEMBUANGAN LIMBAH CAIR INDUSTRI BATIK KOMUNAL TERHADAP KUALITAS AIRTANAH BEBAS

(Studi Kasus di Desa Wijirejo, Kecamatan Pandak, Kabupaten Bantul, Provinsi Daerah Istimewa Yogyakarta)

Intisari

Desa Wijirejo sejak tahun 1980-an sudah terkenal sebagai daerah sentra batik. Sebagai daerah sentra batik, industri batik ini juga berperan sebagai industri penghasil limbah cair yang sangat besar yang dapat mencemari airtanah jika dibuang ke selokan terbuka dan sungai. Air limbah industri batik mudah dikenali karena warnanya yang berasal dari bahan pewarna. Limbah cair batik yang mengandung logam berat dan bahan kimia organik yang masuk lewat selokan terbuka dan sungai dapat mencemari sumur-sumur penduduk.

Metode penelilitan yang digunakan adalah metode survey dan analisis laboratorium. Metode survey ini dilakukan pada pengamatan dan pengukuran di lapangan. Sedangkan uji laboratorium dilakukan dengan menganalisis sampel airtanah. Parameter yang diteliti ada 2, yaitu parameter fisik dan kimia yang terdiri dari: parameter fisik (suhu, TSS, TDS) dan kimia (pH, BOD, COD, Cu, Pb, Cd, Cr Total, dan Sulfida). Peraturan yang dijadikan sebagai acuan dasar yaitu Peraturan Gubernur Daerah Istimewa Yogyakarta No. 20 tahun 2008 tentang Baku Mutu Air di Provinsi Daerah Istimewa Yogyakarta.

Berdasarkan hasil analisis laboratorium, beberapa parameter sampel airtanah ditemukan kandungan yang melebihi baku mutu. Temperatur suhu menunjukkan bahwa kandungan suhu airtanah berkisar antara 24,6-25,4 °C, yaitu masih dibawah baku mutu. Kandungan TSS berkisar antara 1-5 mg/l dengan buku mutu 0 mg/l dan sembilan sampel melebihi baku mutu. Kandungan TDS berkisar antara 177-380 mg/l dengan buku mutu 1000 mg/l. Kandungan TDS masih dibawah baku mutu. Sedangkan kandungan pH pada kondisi normal, yaitu 6,8-7,6 dengan baku mutu 6-9. BOD berkisar antara 2,3-3,5 mg/l dengan buku mutu 2 mg/l. COD berkisar antara 8-17 mg/l dengan buku mutu 10 mg/l. Kandungan BOD semua sampel melebihi baku mutu, sedangkan kandungan COD terdapat 2 sampel yang dibawah baku mutu. Kandungan Cu (tembaga) pada sampel airtanah berkisar < 0,0098-0,036 mg/l dengan baku mutu 0,02 mg/l, terdapat 4 sampel yang melebihi baku mutu. Kandungan Pb (timbal) pada sampel airtanah berkisar < 0,0093-0,042 mg/l dengan baku mutu 0,03 mg/l. Kandungan Cd (kadmium) pada sampel airtanah berkisar < 0,0015-0,024 mg/l dengan baku mutu 0,01 mg/l. Kandungan Cr Total (khromium) pada sampel airtanah berkisar < 0,0126-0,054 mg/l dengan baku mutu 0,05 mg/l. Terdapat 2 sampel airtanah yang melebihi baku mutu dengan tercemar kandungan Pb, Cd, dan Cr Total. Sedangkan parameter sulfida tidak terdeteksi pada seluruh sampel airtanah.

Kata kunci : industri batik, limbah cair, pencemaran, airtanah, baku mutu