# PENGENDALIAN PENCEMARAN AIRTANAH BEBAS DAN AIR SUNGAI AKIBAT LIMBAH CAIR INDUSTRI KERUPUK KULIT DI KALURAHAN SEGOROYOSO, KAPANEWON PLERET, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA

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## INTISARI

Kegiatan Industri kerupuk kulit yang ada di Kalurahan Segoroyoso, Kapanewon Pleret, Kabupaten Bantul, Daerah Istimewa Yogyakarta menghasilkan limbah cair yang dapat menyebabkan berbagai permasalahan lingkungan. Limbah cair industri kerupuk kulit umumnya mengandung kadar BOD, COD, TSS, Amoniak, serta Minyak dan Lemak yang tinggi sehingga dapat mencemari badan air. Belum adanya pengolahan air limbah menyebabkan limbah cair hanya dibuang ke sungai Pesing sebagai badan air penerima dan berpotensi menyebabkan pencemaran serta penurunan kualitas air pada air sungai dan airtanah di daerah penelitian. Dampak secara langsung yang dapat ditimbulkan yaitu timbulnya bau busuk, adanya timbunan minyak dan lemak, serta perubahan warna menjadi hitam dan berbuih pada air sungai dan irigasi. Penelitian ini bertujuan untuk mengetahui kualitas air limbah, air sungai dan airtanah, status mutu air sungai dan airtanah, evaluasi standar stream, dan arahan pengelolaan yang diperlukan untuk permasalahan yang ada.

Penelitian dilakukan dengan metode kuantitatif dan kualitatif. Metode kuantitatif digunakan untuk mengetahui status mutu air berdasarkan hasil uji laboratorium kualitas air limbah, air sungai, dan airtanah untuk parameter BOD, COD, TSS, pH, Minyak dan Lemak, serta Amoniak. Analisis status mutu dilakukan dengan metode indeks pencemaran untuk mengetahui tingkat pencemaran pada air sungai dan airtanah. Pengambilan sampel dilakukan dengan teknik *non-probability sampling* berupa *purposive sampling*. Pengambilan sampel air limbah dilakukan pada outlet industri kerupuk kulit, air sungai pada titik sebelum outlet, setelah outlet, dan saluran irigasi pembuangan limbah serta airtanah pada sumur tidak terdampak industri, sumur dengan jarak ± 3 m dari saluran irigasi, dan sumur terdampak industri. Metode kualitatif digunakan untuk pengumpulan dan analisis data diantaranya pengumpulan studi pustaka, survey dan pemetaan, serta analisis hasil laboratorium, dan indeks pencemaran.

Hasil penelitian menunjukkan bahwa limbah cair memiliki kualitas yang buruk, dimana hanya parameter pH yang masih memenuhi baku mutu. Kualitas air sungai menunjukkan bahwa parameter BOD, COD, dan minyak dan lemak pada beberapa titik masih belum memenuhi baku mutu, sedangkan kualitas airtanah menunjukkan nilai BOD dan COD pada beberapa titik masih belum memenuhi baku mutu. Status mutu air sungai di daerah penelitian termasuk kedalam kategori memenuhi baku mutu pada titik sebelum outlet dengan nilai IP 0,505 serta tercemar ringan pada titik setelah outlet dan saluran irigasi dengan nilai IP 4,160 dan 3,2387. Status mutu airtanah pada ketiga titik termasuk kedalam kategori tercemar ringan dengan nilai IP berturut-turut sebesar 1,279; 2,207; dan 2,605. Hasil evaluasi standar stream menunujukkan bahwa parameter COD, BOD, dan Amoniak masih belum memenuhi baku mutu air sungai dengan nilai 48,888 mg/L; 8,871 mg/L; dan 0,55 mg/L. Arahan pengelolaan dilakukan dengan perancangan unit IPAL komunal sistem kontinyu dengan 6 unit pengolahan yaitu: bak pemisah minyak dan lemak kapasitas 3,4 $m^3$; bak ekualisasi kapasitas 14,58 $m^3$; bak pengendapan awal kapasitas 19,44 $m^3$; bak biofilter anaerob dan bak biofilter aerob kapasitas 28,8 $m^3$; serta bak pengendap awal kapasitas 7,2 $m^3$ dengan biaya Rp 216.125.639,54 yang sudah mampu menurunkan keseluruhan parameter hingga berada di bawah baku mutu.

**Kata Kunci:** Kualitas Air, Indeks Pencemaran, Indutri Kerupuk Kulit, Biofilter

# *CONTROL OF FREE GROUNDWATER AND RIVER WATER POLLUTION DUE TO LIQUID WASTE OF THE COW AND BUFFALO SKIN CRACKERS INDUSTRY IN SEGOROYOSO VILLAGE, PLERET DISTRICT, BANTUL REGENCY, SPECIAL REGION OF YOGYAKARTA*

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## ABSTRACT

*The cow and buffalo skin cracker (in indonesia called "krecek") industry in Segoroyoso Village, Pleret District, Bantul Regency, Special Region of Yogyakarta produces liquid waste which can cause various environmental problems. The liquid waste of the cow and buffalo skin cracker industry generally contains high levels of BOD, COD, TSS, Ammonia, and Oil and Fat so that it can contaminate water bodies. The absence of wastewater treatment causes liquid waste to only be discharged into the Pesing River as a receiving water body and has the potential to cause pollution and decrease in water quality in river water and groundwater at the research location. The direct impact that can be caused is the emergence of a foul odor, the presence of oil and grease deposits, and the discoloration to black and frothy in river and irrigation water. This study aims to determine the quality of wastewater, river water and groundwater, river and groundwater quality status, evaluation of stream standards, and management guidelines needed for existing problems.*

*The research was conducted using quantitative and qualitative methods. Quantitative methods are used to determine the status of water quality based on laboratory test results for the quality of wastewater, river water, and groundwater for the parameters BOD, COD, TSS, pH, Oil and Grease, and Ammonia. Quality status analysis was carried out using the pollution index method to determine the level of pollution in river water and groundwater. Sampling was carried out using a non-probability sampling technique in the form of purposive sampling. Sampling of wastewater was carried out at the cow and buffalo skin cracker industry outlets, river water at points before the outlet, after the outlet, and irrigation canals for waste disposal and groundwater in wells not affected by the industry, wells with a distance of ± 3 m from irrigation canals, and wells affected by the industry.Qualitative methods are used for data collection and analysis including collection of literature, surveys and mapping, as well as analysis of laboratory results, and pollution index.*

*The results showed that the liquid waste had poor quality, where only the pH parameter still met the quality standard. The quality of river water shows that the BOD, COD, and oil and grease parameters at several points still do not meet the quality standards, while the quality of groundwater shows that the values of BOD and COD at several points still do not meet the quality standards. The status of river water quality in the research location is included in the category of fulfilling quality standards at the point before the outlet with an IP value of 0.505 and lightly polluted at the point after the outlet and irrigation canal with an IP value of 4.160 and 3.2387. The groundwater quality status at the three points is included in the slightly polluted category with a IP value of 1.279 respectively; 2.207; and 2,605. The evaluation results of stream standards show that the parameters COD, BOD, and Ammonia still do not meet river water quality standards with a value of 48.888 mg/L; 8.871 mg/L; and 0.55 mg/L. Management directions are carried out by designing a continuous system communal WWTP unit with 6 processing units, namely: oil and grease separator tank with a capacity of 3.4 m3; capacity equalization tank 14.58 m3; initial settling tank capacity of 19.44 m3; anaerobic biofilter tanks and aerobic biofilter tanks with a capacity of 28.8 m3; as well as an initial settling tank with a capacity of 7.2 m3 at a cost of Rp 216,125,639.54 which has been able to reduce all parameters to below the quality standard.*

***Keywords:*** *Water Quality, Pollution Index, Cow and Buffalo Skin Cracker Industry, Biofilter*