

**Kajian Keruangan Pengaruh Limbah Industri Jasa Laundry
terhadap Kondisi Airtanah Bebas di Pogung Kidul Desa Sinduadi
Kecamatan Mlati Kabupaten Sleman**

Gema Reinadova J.R.
17/412022/GE/08540

INTISARI

Pogung Kidul merupakan salah satu daerah padat penduduk yang terletak di wilayah perkotaan Yogyakarta. Kondisinya yang strategis menjadikan Pogung Kidul berperan sebagai tujuan domisili bagi mahasiswa baru setiap tahunnya. Keberadaan mahasiswa yang tekosentrasi di Pogung Kidul menyebabkan tumbuhnya berbagai kegiatan usaha salah satunya industri jasa laundry. Industri jasa laundry menghasilkan limbah cair dalam operasionalnya. Produksi limbah yang banyak dan kontinyu tentunya dapat mencemari potensi lingkungan sekitar salah satunya airtanah bebas. Maka penting dilakukan penelitian dengan tujuan mengkaji persebaran aktivitas industri jasa laundry dan pola pembuangan limbah cair laundry di daerah Pogung Kidul, mengkaji kondisi airtanah bebas di daerah Pogung Kidul dan menganalisis pengaruh limbah cair industri jasa laundry terhadap kondisi airtanah bebas di Pogung Kidul.

Penelitian dilakukan dengan metode survei terhadap pemilik industri jasa laundry, inventarisasi sumur dan pengambilan sampel airtanah, serta limbah industri jasa laundry untuk uji di laboratorium. Pengambilan sampel secara sensus sebanyak 39 industri jasa laundry dan 105 sumur. Parameter fisik dan kimia airtanah yang diuji meliputi: suhu, DHL, TDS, TSS, pH, BOD, COD, fosfat, surfaktan/deterjen dan logam berat (seng dan besi).

Hasil penelitian menunjukkan bahwa distribusi industri jasa laundry terkonsentrasi pada wilayah bagian tengah Dusun Pogung Kidul. Intensitas produksi limbah (*greywater*) industri jasa laundry di Dusun Pogung Kidul berkisar 30 – 750 liter/hari dengan pola pembuangan limbah tanpa diolah sebelum dibuang ke tempat pembuangan seperti sumur resapan, selokan rumah tangga dan sungai. Airtanah bebas Dusun Pogung Kidul secara berurutan memiliki kisaran nilai suhu sebesar $\pm 24,9 - 31,9^{\circ}\text{C}$, DHL sebesar 302,294 – 670 $\mu\text{mhos/cm}$; pH sebesar 5,91 – 7,44 dan Tinggi Muka airtanah (TMA) sebesar 126,3 – 142,08 mdpal dengan arah aliran relatif menuju ke arah barat & barat daya. Kualitas limbah industri jasa laundry di Dusun Pogung Kidul melewati baku mutu limbah laundry. Dampak pencemaran oleh limbah domestik termasuk dari industri jasa laundry terhadap kondisi airtanah bebas Dusun Pogung Kidul masih tergolong rendah, terlihat dari kadar/nilai masing-masing parameter telaah kualitas airtanah yang relatif sesuai dengan baku mutu kelas I. Namun, dampak limbah industri jasa laundry terhadap kondisi airtanah bebas di Pogung Kidul secara spesifik terlihat dari keberadaan fosfat, surfaktan/deterjen, seng dan besi pada beberapa sampel airtanah (C14, H10 & J5) yang berada di Dusun Pogung Kidul bagian tengah, barat, selatan dan sebagian kecil wilayah utara dan timur.

Kata kunci: akuifer bebas, deterjen, kualitas airtanah, limbah laundry, *greywater*

***Spatial Study of Laundry Service Industrial Waste
Impact to the Condition of Unconfined Groundwater in Pogung Kidul,
Sinduadi Village, Mlati District, Sleman Regency***

Oleh:
Gema Reinadova JR
17/412022/GE/08540

ABSTRACT

Pogung Kidul is a densely populated area located in the urban area of Yogyakarta. Its strategic condition makes Pogung Kidul a domicile destination for new students every year. The existence of students who are concentrated in Pogung Kidul causes the growth of various business activities, one of which is the laundry service industry. The laundry service industry produces liquid waste in its operations. The production of large and continuous waste can certainly pollute the potential of the surrounding environment, one of which is unconfined groundwater. Therefore, it is important to research to study the distribution of laundry service industry activities and the pattern of laundry liquid waste disposal in the Pogung Kidul area, assessing the condition of unconfined groundwater in the Pogung Kidul area and analyzing the effect of the laundry service industry liquid waste on the condition of unconfined groundwater in Pogung Kidul.

The research was conducted by surveying the owners of the laundry service industry, taking an inventory of wells, and taking groundwater samples, as well as laundry service industry waste for laboratory testing. Sampling by census of 39 laundry service industries and 105 wells. The physical and chemical parameters of groundwater tested included: temperature, DHL, TDS, TSS, pH, BOD, COD, phosphate, surfactant/detergent, and heavy metals (zinc and iron).

The results show that the distribution of the laundry service industry is concentrated in the central part of Pogung Kidul Hamlet. The intensity of greywater production in the laundry service industry in Pogung Kidul Hamlet ranges from 30 – 750 liters/day with a pattern of waste disposal without being treated before being disposed of in landfills such as infiltration wells, household sewers, and rivers. Pogung Kidul Hamlet unconfined groundwater has a range of temperature values of $\pm 24.9 - 31.9^{\circ}\text{C}$; DHL of 302,294 – 670 mhos/cm; pH of 5,91 – 7,44; and groundwater level (TMA) of 122 – 142,08 mdpal with relative flow direction towards west & southwest. The quality of the laundry service industry waste in Pogung Kidul Hamlet passes the laundry waste quality standard. The impact of pollution by domestic waste, including from the laundry service industry, on the condition of unconfined groundwater in Pogung Kidul Hamlet is still relatively low, as can be seen from the levels/values of each parameter of the groundwater quality study which are relatively following class I quality standards. The condition of unconfined groundwater in Pogung Kidul is specifically seen from the presence of phosphate, surfactant/detergent, and heavy metals (zinc and iron) in several groundwater samples (C14, H10 & J5) located in the central, western, southern parts of Pogung Kidul Hamlet and a small part of the northern and eastern areas.

Keywords: unconfined aquifer, detergent, groundwater quality, laundry waste, greywater