TREATMENT OF DRILLED WELL WATER USING UPFLOW FILTER GALLONS WITH TOTAL DISSOLVED SOLID (TDS) AND TURBIDITY PARAMETERS

Salma Salsabila Putri Giovani[1], Haryono[2], Ibnu Rois[3], Choirul Amri [4]
[1,2,3,4]Department of Environmental Health Poltekkes Kemenkes Yogyakarta,
Jl. Tatabumi No.3 Banyuraden, Gamping, Sleman
email : salmagiovani@gmail.com

ABSTRACT

Background : *Borehole water is a source of clean water widely used by the public to meet daily needs. However, the quality of borehole water often does not meet health requirements due to high levels of Total Dissolved Solids (TDS) and turbidity. Based on a preliminary study in Jambon Hamlet, Sendangagung Village, Minggir District, Sleman Regency, the results showed a TDS level of 617 mg/L and turbidity of 5.99 NTU, which exceeds the quality standards of the Indonesian Minister of Health Regulation Number 2 of 2023. One simple water treatment effort that can be done is using an upflow filter gallon system with zeolite, activated charcoal, and silica sand media.*
Objective : *Knowing the processing of drilled well water using a gallon filter in an upflow manner regarding the Total Dissolved Solid (TDS) and turbidity parameters.*
Method ; *The type of research used was a Quasi Experiment with a One Group Pretest-Posttest design. Processing was carried out using a 19-liter gallon filter with zeolite, activated charcoal, and silica sand media, each 8 cm thick, and a flow rate of 1 liter/minute. Examination of TDS parameters used the Gravimetric method according to SNI 6989.27:2019 and turbidity parameters used the Nephelometric method based on the In-house Method.*
Results : *The results showed that the average TDS level before filtration was 221.3 mg/L, increasing to 270 mg/L after filtration, a 22% increase. Meanwhile, the turbidity level decreased from 11.30 NTU to 6.22 NTU, a 44.5% decrease.*
Conclusion : *Upflow gallon filters are not yet able to reduce TDS levels, but are able to reduce turbidity levels in drilled well water.*

Keywords : *Borehole water, upflow filtration, filter gallon, Total Dissolved Solid (TDS), turbidity.*

PENGOLAHAN AIR SUMUR BOR MENGGUNAKAN GALON FILTER SECARA *UPFLOW* DENGAN PARAMETER *TOTAL DISSOLVED SOLID* (TDS) DAN KEKERUHAN

Salma Salsabila Putri Giovani[1], Haryono[2], Ibnu Rois[3], Choirul Amri [4]
[1,2,3,4]Jurusan Kesehatan Lingkungan Poltekkes Kemenkes Yogyakarta,
Jl. Tatabumi No.3 Banyuraden, Gamping, Sleman
email : salmagiovani@gmail.com

ABSTRAK

Latar belakang : Air sumur bor merupakan salah satu sumber air bersih yang banyak digunakan masyarakat untuk memenuhi kebutuhan sehari-hari. Namun, kualitas air sumur bor sering kali belum memenuhi persyaratan kesehatan karena tingginya kadar *Total Dissolved Solid* (TDS) dan Kekeruhan. Berdasarkan studi pendahuluan di Dusun Jambon, Kalurahan Sendangagung, Kecamatan Minggir, Kabupaten Sleman. Hasil pemeriksaan menunjukkan kadar TDS sebesar 617 mg/L dan kekeruhan sebesar 5,99 NTU yang melebihi baku mutu Permenkes RI Nomor 2 Tahun 2023. Salah satu upaya pengolahan air sederhana yang dapat dilakukan adalah menggunakan galon filter sistem *upflow* dengan media zeolit, arang aktif, dan pasir silika.
Tujuan : Mengetahui pengolahan air sumur bor menggunakan galon filter secara *upflow* terhadap parameter *Total Dissolved Solid* (TDS) dan Kekeruhan.
Metode : Jenis penelitian yang digunakan adalah Quasi Eksperimen dengan desain One Group Pretest-Posttest. Pengolahan dilakukan menggunakan galon filter berukuran 19 liter dengan media zeolit, arang aktif, dan pasir silika masing-masing setebal 8 cm serta debit aliran 1 liter/menit. Pemeriksaan parameter TDS menggunakan metode Gravimetri sesuai SNI 6989.27:2019 dan parameter kekeruhan menggunakan metode Nephelometri berdasarkan Inhouse Methode.
Hasil : Hasil penelitian menunjukkan kadar TDS sebelum filtrasi rata-rata 221,3 mg/L dan setelah filtrasi meningkat menjadi 270 mg/L dengan kenaikan sebesar 22%. Sementara itu, kadar kekeruhan mengalami penurunan dari 11,30 NTU menjadi 6,22 NTU dengan persentase penurunan sebesar 44,5%.
Kesimpulan : Galon filter secara *upflow* belum mampu menurunkan kadar TDS, namun mampu menurunkan kadar kekeruhan pada air sumur bor.

Kata kunci : Air sumur bor, filtrasi upflow, galon filter, Total Dissolved Solid (TDS), kekeruhan.