EFEKTIVITAS FILTER PASIR SILIKA DAN ARANG SEKAM PADI DALAM MENURUNKAN KADAR BESI (Fe) DAN KEKERUHAN AIR SUMUR GALI

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INTISARI

Latar Belakang: Air sumur gali di Desa Ngumbul, Kab Bantul, Yogyakarta mengandung Fe dan kekeruhan yang melebihi ambang batas menurut (Peraturan Menteri Kesehatan Republik Indonesia Nomor. 02 Tahun 2023). Kadar Fe dan kekeruhan yang tinggi dapat menyebabkan gangguan kesehatan dan mempengaruhi estetika, sehingga diperlukan pengolahan air yang efektif dan ekonomis.
Tujuan: Penelitian ini bertujuan mengetahui efektivitas kombinasi media pasir silika dan arang sekam padi dalam menurunkan kadar Fe dan kekeruhan.
Metode: Jenis penelitian ini menggunakan desain *quasi experiment* dengan *pretest-Posttest With Control Group Design.* Tiga variasi kombinasi media pasir silika dan arang sekam padi dalam sistem filtrasi. Filter A (50 cm:50 cm), Filter B (60 cm:40 cm), Filter C (40 cm:60 cm), serta filter kontrol. Sampel diambil menggunakan *purposive sampling,* dengan pengulangan 6 kali.
Hasil: Penelitian ini menunjukan kombinasi pasir silika dan arang sekam padi variasi tiga filter memberikan pengaruh signifikan dengan $p < 0,05$ sehingga ada perbedaan kadar Fe dan kekeruhan sebelum dan sesudah melalui filter, dengan hasil Filter A mampu menurunkan kadar Fe (79,5%) kekeruhan (77,5%), Filter B kadar Fe (75,1%) kekeruhan (74,1%), dan filter C kadar Fe (71,3%) kekeruhan (73,6%).
Kesimpulan: Ada pengaruh yang signifikan dari ketiga varian filter, tetapidari ketiga filter tidak terdapat filter yang efektif dalam menurunkan kadar Fe dan kekeruhan hingga baku mutu 0,02 mg/L dan 0,5 NTU.

Kata Kunci: Kadar Fe, Kekeruhan, Filtrasi, Pasir silika, Arang aktif sekam padi.

EFFECTIVENESS OF SILICA SAND AND RICE HUSK CHARCOAL FILTERS IN REDUCING IRON (Fe) LEVELS AND TURBIDITY OF WELL WATER

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ABSTRACT

Background: Dug well water in Ngumbul Village, Bantul Regency, Yogyakarta contains Fe and turbidity that exceeds the limit according to (Regulation of the Minister of Health of the Republic of Indonesia Number. 02 of 2023). High levels of Fe and turbidity can cause health problems and affect aesthetics, so effective and economical water treatment is needed.
Objective: This study aims to determine the effectiveness of the combination of silica sand and rice husk charcoal media in reducing Fe levels and turbidity.
Methods: This type of research uses a quasi-experimental design with pretest-posttest with control group design. Three variations of silica sand and rice husk charcoal media combinations in the filtration system. Filter A (50 cm: 50 cm), Filter B (60 cm: 40 cm), Filter C (40 cm: 60 cm), and a control filter. Samples were taken using purposive sampling, with 6 repetitions.
Results: This study shows that the combination of silica sand and rice husk charcoal with three filter variations has a significant effect with a p-value of 0.000 so that there is a difference in Fe levels and turbidity before and after passing through the filter, with the results of Filter A being able to reduce Fe levels (79.5%) turbidity (77.5%), Filter B Fe levels (75.1%) turbidity (74.1%), and Filter C Fe levels (71.3%) turbidity (73.6%).
Conclusion: There was a significant influence of the three filter variants, but of the three filters, none of the filters was effective in reducing Fe levels and turbidity to the quality standards of 0.02 mg/L and 0.5 NTU.

Keywords: Fe content, Turbidity, Filtration, Silica sand, Charcoal