Efektivitas Aerasi dan Filtrasi terhadap Penurunan Kadar Mangan (Mn) pada Air Sumur Bor berdasarkan Lama Kontak dan Ketebalan Media

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ABSTRAK
Latar Belakang: dalam penyediaan air bersih harus memenuhi syarat kualitas kimia, salah satunya kadar mangan (Mn). Kualitas air sumur masyarakat Desa Jeketro Kecamatan Gubug Kabupaten Grobogan tidak memenuhi syarat kimia (Mn=2,637 mg/L). Salah satu alternatif menurunkan kadar mangan (Mn) pada air yaitu dengan metode aerasi dan filtrasi. Penelitian ini bertujuan untuk mengetahui efektivitas aerasi dan filtrasi terhadap penurunan kadar mangan pada air sumur berdasarkan lama kontak dan ketebalan media. **Metode**: jenis penelitian ini adalah experimen semu dengan rancangan faktorial. Variabel bebas penelitian ini yaitu lama kontak 5, 10, 15 menit dan ketebalan media 50, 60, 70 cm sedangkan variabel terikatnya yaitu penurunan kadar mangan. Hasil penelitian dianalisis menggunakan uji statistik *Two Way Anova*. **Hasil**: rata-rata kadar Mn pada air sumur sebelum perlakuan sebesar 2,637 mg/L, sedangkan rata-rata kadar Mn sesudah dilakukan aerasi dan filtrasi pada perlakuan 1 sebesar 0,918 mg/L, perlakuan 2 0,737 mg/L, perlakuan 3 0,553 mg/L, perlakuan 4 0,492 mg/L, perlakuan 5 0,391 mg/L, perlakuan 6 0,351 mg/L, perlakuan 7 0,256 mg/L, perlakuan 8 0,126 mg/L, dan perlakuan 9 0,051 mg/L. Rata-rata persentase penurunan kadar Mn sebesar 75,76%. Pengaruh lama kontak (p-value=0,000), pengaruh ketebalan media (p-value=0,000), pengaruh interaksi lama kontak dan ketebalan media filter (p-value=0,045) terhadap rata-rata persentase penurunan kadar mangan pada air sumur bor. **Simpulan**: ada pengaruh signifikan lama kontak, ketebalan media, interaksi lama kontak dan ketebalan media terhadap rata-rata persentase penurunan kadar mangan pada air sumur bor. Penelitian ini optimal pada perlakuan 9 yaitu ketebalan media 70 cm dengan lama kontak 15 menit.
Kata kunci: Penurunan kadar mangan, air sumur, variasi lama kontak dan ketebalan media

ABSTRACT
Background: One of provision of clean water is, it has to comply the chemical quality requirements, one of chemical material that is not supposed to be in the clean water is manganese (Mn). The water quality of Jeketro Village at Grobogan District did not comply the chemical requirements (Mn = 2,637 mg / L). The alternative to reduce manganese (Mn) levels in water is by aeration and filtration methods. The purpose of this study is to determine the effectiveness of aeration and filtration on decreasing manganese levels in well water based on contact duration and media thickness. **Method**: this type of study is a false experiment with factorial design. The independent variables of this study are contact time 5, 10, 15 minutes and media thickness 50, 60, 70 cm while the dependent variable is the decrease in manganese content. **Result**: the average Mn level in well water before treatment was 2,637 mg / L, while the average Mn level after aeration and filtration in treatment 1 was 0,918 mg / L, treatment 2 was 0,737 mg / L, treatment 3 was 0,553 mg / L, treatment 4 0,492 mg / L, treatment 5 0,391 mg / L, treatment 6 0,351 mg / L, treatment 7 0,256 mg / L, treatment 8 0,126 mg / L, and treatment 9 0,051 mg / L. The average percentage reduction in Mn levels was 75.76%. The effect of contact time (p-value = 0,000), the influence of media thickness (p-value = 0,000), the effect of interaction of contact duration and filter media thickness (p-value = 0,045) on the average percentage of manganese reduction in wellbore water. **Conclusion**: there is a significant effect of contact duration, media thickness, interaction of contact duration and media thickness on the average percentage of manganese reduction in well water. This study is optimal in treatment 9 that is 70 cm media thickness with 15 minutes contact time.
Keywords: Decrease in manganese content, well water, variations in contact time and media thickness