

Pengaruh Variasi Jumlah Tray dalam Sistem Tray Aerator dan Ketebalan Media Filter terhadap Penurunan Kadar Besi (Fe) pada Air Sumur Bor

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ABSTRAK

Latar belakang : kualitas kimia air bersih yang harus dipenuhi salah satunya adalah kadar besi. Kadar Fe dalam air tanah dapat menyebabkan masalah lingkungan dan kesehatan. Berdasarkan hasil uji laboratorium didapatkan hasil kadar Fe air sumur Desa Jeketro, Kecamatan Gubug, Kabupaten Grobogan sebesar 1,03 mg/l. Salah satu pengolahan air untuk menurunkan kadar besi pada air sumur yaitu dengan aerasi-filtrasi. Penelitian ini bertujuan untuk mengetahui pengaruh variasi jumlah tray dalam sistem tray aerator dan ketebalan media filter terhadap penurunan kadar besi. **Metode** : penelitian ini adalah eksperimen semu. Variabel bebas penelitian ini adalah jumlah tray dan ketebalan media, sedangkan variabel terikatnya yaitu penurunan kadar besi. Hasil penelitian diuji menggunakan uji *Two Way Anova* dan *Post Hoc Test*. **Hasil** : rata-rata kadar besi (Fe) pada air sumur sebelum perlakuan yaitu sebesar 1,07 mg/l, sedangkan rata-rata kadar besi sesudah dilakukan perlakuan pada perlakuan 1 yaitu sebesar 0,291 mg/l, perlakuan 2 sebesar 0,277 mg/l, perlakuan 3 sebesar 0,256 mg/l, perlakuan 4 sebesar 0,233mg/l, perlakuan 5 sebesar 0,214mg/l, perlakuan 6 sebesar 0,193mg/l, perlakuan 7 sebesar 0,168mg/l, perlakuan 8 sebesar 0,147mg/l, perlakuan 9 sebesar 0,121 mg/l. Rata-rata persentase penurunan kadar besi (Fe) pada air sumur bor sebesar 73,03 %. Pengaruh jumlah tray (p-value = 0,000), pengaruh ketebalan media (p-value = 0,000), pengaruh interaksi jumlah tray dan ketebalan media (p-value = 0,590) terhadap penurunan kadar besi (Fe) pada air sumur bor. **Simpulan** : ada pengaruh signifikan jumlah tray, ketebalan media terhadap penurunan kadar besi (Fe) pada air sumur bor. Tidak ada pengaruh interaksi antara jumlah tray dalam sistem tray aerator dengan ketebalan media terhadap penurunan kadar besi (Fe) pada air sumur bor. Penelitian ini optimal pada jumlah tray 10 dengan ketebalan media filter 100 cm.

Kata kunci : Air sumur, Fe, Tray Aerator, Media Filter

ABSTRACT

Background: Chemical quality of clean water that must be met, one of which is iron content. Fe content in ground water can cause environmental and health problems. Based on the results of laboratory tests, the results of Fe content of Jeketro Village well water, Gubug District, Grobogan District were 1.03 mg / l. One of the water treatment to reduce iron content in well water is by aeration-filtration. This study aims to determine the effect of variations in the number of trays in the tray aerator system and the thickness of the filter media to decrease iron content. **Method**: this research is a quasi-experimental. The independent variable of this study is the number of trays and media thickness, while the dependent variable is the decrease in iron content. The results of the study were tested using the Two Way Anova test and Post Hoc Test. **Results**: the average level of iron (Fe) in well water before treatment is 1.07 mg / l, while the average iron content after treatment in treatment 1 is 0.291 mg / l, treatment 2 is 0.277 mg / l, treatment 3 was 0.256 mg / l, treatment 4 was 0.233 mg/l, treatment 5 was 0.214 mg / l, treatment 6 was 0.193 mg / l, treatment 7 was 0.168 mg / l, treatment 8 was 0.147 mg / l, treatment 9 was 0.121 mg / l. The average percentage of iron (Fe) reduction in bore well water is 73.03%. The effect of the number of trays (p-value = 0,000), the influence of media thickness (p-value = 0,000), the effect of the interaction of the number of trays and media thickness (p-value = 0,590) on the decrease in iron (Fe) levels in wellbore water. **Conclusion**: there is a significant effect of the number of trays, the thickness of the media on the decrease in iron (Fe) levels in wellbore water. There is no interaction effect between the number of trays in the tray aerator system and the thickness of the media to reduce iron (Fe) levels in wellbore water. This research is optimal in the number of tray 10 with a thickness of 100 cm filter media.

Keywords: Well water, Fe, Tray Aerator, Filter Media