

Efektivitas Media Filter Mazera (Pasir Mangan, Zeolit, dan Arang Aktif) Dalam Menurunkan Kadar Mangan Pada Air Sumur Gali

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ABSTRAK

Latar Belakang: Air sumur gali yang mengandung mangan (Mn) melebihi baku mutu dapat menurunkan kualitas air dan berpotensi menimbulkan gangguan kesehatan. Berdasarkan hasil pemeriksaan awal, kadar mangan pada air sumur gali di Dusun Krajan sebesar 1,60 mg/L, melebihi baku mutu menurut Permenkes RI Nomor 2 Tahun 2023 yaitu 0,1 mg/L. Salah satu upaya pengolahan yang dapat dilakukan adalah menggunakan Filter Mazera dengan media pasir mangan, zeolit, dan arang aktif.

Tujuan: Mengetahui efektivitas Filter Mazera dalam menurunkan kadar mangan (Mn) pada air sumur gali di Dusun Krajan, Desa Poncosari, Kapanewon Srandakan, Kabupaten Bantul.

Metode: Penelitian ini merupakan penelitian eksperimen semu (*quasi experiment*) dengan desain *one group pretest-posttest*. Sampel berupa air sumur gali dengan kadar mangan awal 1,60 mg/L. Filtrasi dilakukan menggunakan sistem *upflow* dengan media pasir mangan, zeolit, dan arang aktif. Pengukuran kadar mangan dilakukan sebelum dan sesudah filtrasi pada volume kumulatif 10, 20, 30, 40, dan 50 liter.

Hasil: Kadar mangan menurun menjadi 1,10 mg/L pada volume 10 liter dan 1,00 mg/L pada volume 20 liter dengan efisiensi penurunan masing-masing sebesar 31,25% dan 37,5%. Namun, kadar mangan meningkat menjadi 1,90 mg/L, 2,30 mg/L, dan 2,50 mg/L pada volume 30, 40, dan 50 liter. Rata-rata kadar mangan setelah filtrasi sebesar 1,76 mg/L.

Kesimpulan: Filter Mazera belum efektif dalam menurunkan kadar mangan pada air sumur gali. Peningkatan kadar mangan diduga dipengaruhi oleh kejenuhan media dan pelepasan kembali mangan dari media filtrasi.

Kata Kunci: mangan, air sumur gali, filtrasi, pasir mangan, Filter Mazera.

Effectiveness of Mazera Filter Media (Manganese Sand, Zeolite, and Activated Charcoal) in Reducing Manganese Levels in Dug Well Water

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ABSTRACT

Background : Dug well water containing manganese (Mn) above the quality standard may reduce water quality and potentially cause health problems. Preliminary examination showed that the manganese concentration in dug well water in Krajan Hamlet was 1.60 mg/L, exceeding the quality standard of 0.1 mg/L according to the Indonesian Ministry of Health Regulation No. 2 of 2023. One treatment method that can be applied is the Mazera Filter using manganese sand, zeolite, and activated carbon media.

Objective : To determine the effectiveness of the Mazera Filter in reducing manganese (Mn) levels in dug well water in Krajan Hamlet, Poncosari Village, Srandakan District, Bantul Regency.

Method ; This study employed a quasi-experimental method with a one-group pretest-posttest design. The sample was dug well water with an initial manganese concentration of 1.60 mg/L. Filtration was carried out using an upflow system with manganese sand, zeolite, and activated carbon media. Manganese levels were measured before and after filtration at cumulative volumes of 10, 20, 30, 40, and 50 liters.

Results : Manganese concentrations decreased to 1.10 mg/L and 1.00 mg/L at cumulative volumes of 10 and 20 liters, with removal efficiencies of 31.25% and 37.5%, respectively. However, the concentrations increased to 1.90 mg/L, 2.30 mg/L, and 2.50 mg/L at cumulative volumes of 30, 40, and 50 liters. The average manganese concentration after filtration was 1.76 mg/L.

Conclusion : The Mazera Filter was not effective in reducing manganese levels in dug well water. The increase in manganese concentration was likely caused by media saturation and manganese release from the filtration media.

Keywords : Manganese, dug well water, filtration, manganese sand, Mazera Filter.