

PERBEDAAN KADAR BESI (FE) SEBELUM DAN SESUDAH DILAKUKAN TRAY AERASI DAN ADSORPSI BATU ZEOLIT DI DESA GEMURUNG KECAMATAN GEDANGAN KABUPATEN SIDOARJO

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ABSTRAK

Air adalah sumber daya alam yang sangat penting untuk kehidupan di bumi dan harus terjaga agar tetap bermanfaat bagi manusia dan makhluk hidup lain. Kadar Fe sangat penting bagi kehidupan manusia, tetapi juga berdampak buruk apabila belum memenuhi persyaratan. Dari hasil studi pendahuluan didapatkan hasil kadar Fe 0,6 mg/l yang melebihi standar baku mutu Permenkes RI No. 02 Tahun 2023 yaitu 0,2 mg/l. Tujuan dari penelitian ini adalah dapat mengukur kadar Fe sebelum dan sesudah, serta menguji perbedaan penurunan kadar besi Fe setelah perlakuan tray aerasi dan adsorpsi dengan batu zeolit.

Jenis penelitian ini ialah penelitian Pra-eksperimen serta menggunakan desain penelitian one group pretest-posttest only design. Desain ini dilakukan dengan cara mengetahui kandungan Fe sebelum diberi perlakuan tray aerasi dan adsorpsi yang akan dilakukan pemeriksaan kandungan Fe pada air sampel.

Hasil penelitian didapatkan perbedaan penurunan kadar Fe dengan presentase penurunan 59,58%. Hasil dari analisis uji paired t-test ialah ada perbedaan penurunan tray aerasi dan adsorpsi terhadap penurunan kadar besi (Fe). Perbedaan penurunan kadar Fe dipengaruhi oleh aerasi yang semakin lama air kontak dengan udara dan membentuk partikel Fe mengendap, sehingga dilakukan adsorpsi agar partikel Fe tersaring dan tidak menimbulkan kenaikan kadar Fe. Disarankan bagi peneliti yang akan melanjutkan untuk melakukan variasi tingkatan tray aerasi dan menggunakan variasi waktu, serta variasi waktu dalam penggunaan batu zeolit.

Kata kunci : Kadar Fe, Air Bersih, Tray Aerasi, Adsorpsi, Batu Zeolit

DIFFERENCES IN IRON (FE) LEVELS BEFORE AND AFTER AERATION TRAY AND ZEOLITE ADSORPTION IN GEMURUNG VILLAGE, GEDANGAN DISTRICT, SIDOARJO REGENCY

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ABSTRACT

Water is a natural resource that is very important for life on earth and must be preserved so that it remains beneficial for humans and other living things. Fe levels are very important for human life, but also have a negative impact if they do not meet the requirements. From the results of the preliminary study, it was found that the Fe level was 0.6 mg/l which exceeded the quality standard of Permenkes RI No. 02 of 2023 which is 0.2 mg/l. The purpose of this study is to measure Fe levels before and after, and test the difference in the decrease in Fe iron levels after aeration tray treatment and adsorption with zeolite stones.

This type of research is Pre-experiment research and uses a one group pretest-posttest only design. This design is done by knowing the Fe content before being treated with aeration and adsorption trays which will be examined for Fe content in sample water.

The results showed a difference in the decrease in Fe content with a percentage decrease of 59.58%. The result of the paired t-test analysis is that there is a difference in the decrease in aeration and adsorption trays to reduce iron (Fe) levels. The difference in the decrease in Fe levels is influenced by aeration which is the longer the water is in contact with air and forms Fe particles to precipitate, so adsorption is carried out so that Fe particles are filtered and do not cause an increase in Fe levels. It is recommended for researchers who will continue to vary the level of the aeration tray and use variations in time, as well as variations in the time of use.

Keywords: Ferrum, Clean Water, Aeration Tray, Adsorption, Zeolite Stone