THE FORMATION SCHMUTZDECKE LAYER OF SLOW SAND FILTER UNIT FOR BRACKISH WATER TREATMENT BASED ON PARAMETERS TOTAL N, P TOTAL, TOTAL *coli*, AND COD

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ABSTRACT

The supply of clean water in coastal areas still have some problems, especially the low level of services and the provision access to clean water. By utilizing brackish water in coastal areas and its potential, then the public can process the brackish water into drinking water using a filtration method so the public can fulfill they needed for clean water. Filtration building units used are slow sand filter (SSF) which is a drinking water treatment plant utilizing biofilm layer formed on the filter media. Geotextile filter media is media that can help to eliminate pollutants such as turbidity, COD, total N, total P and total *coli*. The purpose of this study is to analyze the amount of the allowance for total coli, COD, total N, and total P can be reduced by Slow Sand Filter unit for brackish water, and analyzed schmutzdecke layer formation in SSF units for brackish water treatment.

This research will use two variables: the variation of geotextile media usage and rate filtration variations. Variety of media used is by installing a geotextile on one medium reactors with geotextile media thickness of 6 cm and not installing geotextile media on one another reactor unit, while the rate filtration variations are used, are 0.1 and 0.3 \(m^3/m^2\cdot jam\) used downflow direction of flow in the processing.
The results showed the effectiveness of a decrease in the efficiency of the total Coli, COD, total N and total P by SSF units using raw water is fresh water wells on the variation of media use geotextile 6 cm thick and has a filtration rate of 0.1 m$^3$/m$^2$.jam and the most effectiveness to removal the total Coli, COD, total N and total P by SSF units using raw water is brackish water wells on the variation of media use geotextile 6 cm thick and has a 0.3 m$^3$/m$^2$.jam filtration rate. Order to SSF units brackish raw water wells obtained an average reduction efficiency of each parameters are the total N, total P, total coli and COD by 25%, 43.71%, 75.44%, and 16.49%. In SSF units of fresh raw water wells obtained an average reduction efficiency of each parameters are the total N, total P, total coli and COD by 55.46%, 33.50%, 97.76%, and 10.78%. Based on the results of SEM analysis performed on media SSF units for brackish water treatment that does not happen get schmutzdecke layer formation. This is due to the high salinity levels contained in the raw water.

Kata kunci: Brackish water, Total N, Total P, Slow sand filter, Schmutzdecke