ABSTACT

Drinking water is a basic human need that must be met anytime and anywhere. One of the ways to produce drinking water is through reverse osmosis. Reverse osmosis is one of the technologies used to filter particulate contaminants from water using a semi-permeable membrane. This research was conducted to obtain a reverse osmosis water filter arrangement that meets the needs of Senior Highschool State 28 of Jakarta, so that the drinking water produced meets the drinking water standards according to the Regulation of the Minister of Health of the Republic of Indonesia No. 2 of 2023. Based on the laboratory test results, the tap water at Senior Highschool State 28 of Jakarta is contaminated with heavy metals and does not meet drinking water quality standards, with a lead content of 0.012 ppm, or 20% higher than permitted. The research results in this paper show that the designed reverse osmosis water filter system is optimal for converting tap water into drinking water that meets physical, chemical and biological qualities. The lead levels were reduced to <0.006 ppm, and on average the unit was able to filter out 90% of the dissolved particles. Not only that, but chemical properties such as water pH can be improved from 6.7 to 7.1 by adding a bio sense system after the reverse osmosis membrane.

Keywords: Reverse osmosis, drinking water, water filter