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Performance of Nanofiltration (NF) and Low Pressure Reverse Osmosis (LPRO) Membranes in the Removal of Fluorine and Salinity from Brackish Drinking Water

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Author(s)

Courfia K. Diawara, Saidou N. Diop, Mouhamadou A. Diallo, Michel Farcy, André Deratani

ABSTRACT

Certain areas in Senegal have a serious problem of high fluoride and salinity in underground water because of soil properties. This water currently used for drink has a bad taste on consumption and caused diseases like dental fluorosis and skeletal fluorosis. A membrane filtration plant constructed by Pall Corporation was improved through nanofiltration (NF) and Low Pressure Reverse Osmosis (LPRO). Both NF and LPRO membranes were shown applicable for salinity and fluoride ions removal from brackish and high fluorinated drinking water in a remote community. The NF membrane has given a fluorine retention rate varying between 63.3% and 71% while the LPRO membrane allow to reach 97 to 98.9% for fluorine rejection. Highest salinity rejection rates expressed through conductivity measurements are around 46% and 97% for respectively NF and LPRO.

KEYWORDS

Desalination and Brackish Water, Fluorine, Nanofiltration, Reverse Osmosis

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