

Cleaning ultrafiltration membranes by different chemical solutions with air bubbles

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ABSTRACT

In many developing countries, the access to safe drinking water is not available to all the population. As a response to these problems, AQUAPOT project developed a water treatment facility based on ultrafiltration (UF) technology able to be used in developing countries that are working in Ecuador and Mozambique. Up to now, the major problem detected in the field application of UF in drinking water production from surface water has been membrane fouling and its cleaning. To study the consequences that lack of cleaning and maintenance of the installation can have over the membranes, AQUAPOT has simulated fouling over UF membrane that suffered from an irreversible fouling after long term filtration of surface water. The experimental study included characterization of the foulant layer and chemicals test (under static and dynamic conditions) to remove membrane fouling, with moderate results for chemicals solutions tested. In this study, air bubbles are used as an alternative, cost effective and environmentally friendly membrane cleaning technique to remove severe fouling. This work describes the experimental procedure performed in the physico-chemical test with chemical solutions bubbled with air, and the main results obtained when comparing the permeability values before and after cleaning the membrane.

Keywords: AQUAPOT; Potabilisation; Ultrafiltration; Surface water; Membrane cleaning; Air bubbles

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