

Use of DBNPA to control biofouling in RO systems

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ABSTRACT

This paper discusses the use of the non-oxidative biocide 2,2-dibromo-3-nitrilopropionamide (DBNPA) to minimize and/or eliminate problems due to biofouling accumulation and to ensure long-term performance of a RO system. DBNPA is a suitable biocide due to its compatibility with reverse osmosis (RO) membranes. Our aim is to present a better understanding of DBNPA, its rejection by common RO membrane types and the environmental chemistry concepts for residual DBNPA and its by-products in the outlet concentrate stream. The application areas covered are industrial water and off-line drinking water systems. Examples of field studies conducted on full-scale RO systems that use DBNPA will be shown. Also discussed are the data obtained from the analysis that was carried out to determine the degradation of DBNPA in the RO feed and outlet stream. The benefits of using DBNPA for biofouling prevention include reducing the required feed pressure and the cleaning frequency of the RO system. Other benefits are reduced cleaning chemical costs, reduced downtime of the plant and reduced time of the operators. This results in increased output of the plant and reduced operating expenses of the RO operation.

Keywords: RO systems; Biofouling; Biocide; DBNPA; Operating cost

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