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Freezing process – a new approach for nitrate removal from drinking water

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ABSTRACT

Nowadays a considerable number of people all around the world are affected by severe water scarcity. Nitrate and nitrite are widespread in the environment. Nitrate is the most common chemical contaminant in the world's groundwater aquifers. Conventional water treatment processes used at municipal water treatment plants such as coagulation, sedimentation, filtration, and chlorination, and even some of the most common tertiary processes like adsorption are not effective for nitrate removal. Among the novel techniques for nitrogen removal from aqueous solutions, the freezing-melting process is of the most convenient and effortless especially for a nonexpert person. The main objective of this study was to evaluate the performance of nitrate removal from aqueous solutions through freezing-melting process. Eight different nitrate concentrations ranged from 50 up to 250 mg/L were used in this study. Nitrate content of these solutions was reduced to its drinking water standard just by a single run or right after the first repetition of the process.

Keywords: Nitrate; Freezing process; Drinking water; Crystallization

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