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DISINFECTION STUDY WITH ClO_2 FOR RECYCLING DEMIJOHNS IN DRINKING WATER INDUSTRY

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The disinfection of recycling polymer based demijohns using in drinking water industry was targeted by using chlorine dioxide containing solutions. 1.5 l volume polyethylene terephthalate bottle was chosen as container to characterize the polymeric demijohn. Disinfection of the intentionally contaminated containers was performed with the 0.3 – 2 ppm range ClO_2 containing washing solutions which were prepared from the stock solution. Active matter concentration, washing time and the washing number were studied in gradient. Disinfection efficacy of ClO_2 on Escherichia coli ATCC 25922 and Enterococcus faecalis ATCC 29212 was investigated. The bacteria were chosen according to "Implementing Regulation on Water Intended for Human Consumption". Viable bacterial cell was enumerated by membrane filtration method. The results were established as colony forming unit. The increasing of the concentration decreased the washing time is another determined result.

Keywords: chlorine dioxide, sodium chloride, drinking water, disinfection, water bottle, polyethylene terephthalate bottle, demijohn.

Introduction

Chlorine dioxide is one of the most preferred alternative disinfectants due to having some unique properties such as rapid bacterial destruction, lover cost, higher oxidizing potential and minimum level of residual disinfection by products (DBP) [1, 2]. Occurrence of DBP in the drinking water treatment process is a rising serious problem due to the increasing of the organic content of the water resources. Recently, the use of alternative disinfectants to reduce the DBP content of drinking water is recommended [3].

ClO_2 as a disinfectant has some advantages when compared with the other well-known kinds such as chlorine-based ones. Because, chlorinated

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