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EFFICACY OF CHLORINE DIOXIDE AND SODIUM HYPOCHLORITE IN REUSE WATER DISINFECTION

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Abstract

Potable water is becoming day by day more difficult and more expensive to obtain. Therefore to reduce the pressure in natural water resources, wastewater reclamation is expanding through many municipalities and industries for applications where potable water is not required. However, specific treatments must be performed before the water reuse. These treatments are necessary to reduce physical-chemical and microbiological contaminants. This work has evaluated the action of chlorine dioxide (ClO₂) and sodium hypochlorite (NaOCl) in reducing the mesophilic aerobic micro-organisms population as well as diminishing the chlorine demand in the water used. The results have shown that chlorine dioxide is less affected by water contaminants when compared to sodium hypochlorite; a 3 log cycle reduction in mesophilic aerobic micro-organism population was obtained by using a ClO₂ residual concentration of 0.2 mg·L⁻¹ and a chlorine residual, from NaOCl, of 0.8 mg·L⁻¹. To obtain these concentrations, it is necessary to dose 5.0 mg·L⁻¹ of ClO₂ and 15.5 mg·L⁻¹ of NaOCl in water.

Key words: chlorine demand, ClO₂ residual, Cl₂ residual, decimal reduction, mesophilic aerobic microorganisms

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