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NITROGEN AND *Escherichia coli* REMOVAL IN FACULTATIVE FINISHING LAGOONS RECEIVING TREATED URBAN WASTEWATER

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Abstract

The scarcity of water resources, especially in the agricultural sector, is an increasing problem both in developing and industrialized countries. Recent studies and reports have shown the high potential of wastewater reuse mostly in South European countries. In this paper, we study the possibility to reuse wastewater from the Santerno full-scale wastewater treatment plant located in Imola (Bologna, Italy). Specific monitoring campaigns have been carried out in Basin 1 of the natural finishing treatment of the plant and these data are analysed and discussed. The Nitrogen and *Escherichia coli* degradation has been analysed with respect to the nitrification/denitrification and disinfection processes in the water volume. Furthermore, we have implemented a prediction model for the *Escherichia coli* degradation in Basin 1 and compared the results with the measured data. The comparison results are encouraging, showing that a future implementation of the model on Basin 1 is possible. Finally, the first data collected on a pilot plant designed and realized near Basin 1, are discussed. The *Escherichia coli* data collected in pilot plant and Basin 1, show that the main part of the disinfection process occurs in the upper layer of Basin 1 (around 60 cm). Consequently, this layer is crucial in order to define future management policies that can be tested on the pilot plant and then adopted on the full-scale plant.

Keywords: disinfection; finishing lagoon; nitrogen removal; solar radiation; wastewater reuse

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