

Comparative study on removal of pathogenic and parasitic organisms using extended wastewaters treatment technologies

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ABSTRACT

Although there is an absence of common guidelines or regulations about wastewater reuse at European Community level, there are several countries or federal regions that have published their own standards or regulations. In Spain, the current Royal Decree 1620/2007 regulates the legal regime for reuse of treated wastewaters for different uses. The aim of present study is to evaluate the removal performance of certain parasitic and pathogenic organisms by means of the use of different extensive wastewater treatment technologies in small communities. The study results were assessed based on both the EU Urban Wastewater Directive (91/271/EEC) and Spanish Royal Decree. The selected extended technologies are installed in the Experimental Plant of Urban Wastewater Treatment of Carrión de los Céspedes, PECC, (Sevilla, Andalusia, Spain) property of Andalusian Water Agency (Andalusian Department of the Environment). These extensive technologies are: 1) stabilization ponds, 2) constructed wetlands, and 3) peat filters. The following parasitic and pathogenic organisms have been considered: 1) Helminths ova, 2) total and phytoparasitic nematodes, and 3) *Escherichia coli*. The following physical-chemicals parameters have been analysed: 1) COD, 2) BOD₅, 3) TSS, and (4) turbidity. Samples were collected and analysed fortnightly from March, 2007 to May 2008 using PECC's monitoring protocol. We consider that the evaluation of removal efficiency of studied organisms, as well as on reduction of organic matter, could be used as tool to assess the suitability of treated wastewaters reuse in small communities according to the uses specified in the Spanish Royal Decree 1620/2007.

Keywords: Reuse; Wastewater; Extended technologies; Pathogenic and parasitic organisms

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