



Removal capacity of BTEX and metals of constructed wetlands under the influence of hydraulic conductivity

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ABSTRACT

Constructed wetlands are a natural alternative to technical methods of wastewater treatment. They can remove Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), and metals from wastewater, which are commonly encountered pollutants. In this paper, an experimental pilot-scale Horizontal Subsurface Flow Constructed Wetland (HSFCW) located in Lecce (Apulia, South Italy) has been reported. The experiments were carried out in three constructed wetlands. Two of them were planted with two different species of macrophytes and the third was used as a control. The objectives of this study are to compare hydraulic behavior of the CWs with the trend of the model by varying the hydraulic conditions, to evaluate the effect of the clogging and then to assess the efficiency of the different species of macrophytes in removing BTEX and metals. At the beginning of the experience and after 24 months, the results show a good correlation in the hydraulic behavior between model and physical data by modifying input parameters as a consequence of the clogging. The BTEX removal planted fields is higher than the unplanted one, while the three HSFCWs have a similar capacity in removing Cr, Fe, and Pb.

Keywords: BTEX; Constructed wetlands; Hydraulic conductivity; Metals; *Phragmites australis*; *Typha latifolia*

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