

## TREATMENT OF TANNERY WASTEWATER IN CONSTRUCTED WETLANDS OPERATING IN SERIES WITH DIFFERENT PLANT SPECIES

Cristina S.C. Calheiros<sup>(\*)</sup>, António O.S.S. Rangel and Paula M.L. Castro

*Escola Superior de Biotecnologia – Universidade Católica Portuguesa  
Rua Dr. António Bernardino de Almeida, Porto, Portugal* (<sup>\*</sup>)[mccalheiros@mail.esb.ucp.pt](mailto:mccalheiros@mail.esb.ucp.pt)

### ABSTRACT

The treatment of tannery wastewater has been a very important issue for pollution control in leather producing countries due to its high pollutant content. Biological processes offer a natural way of treating wastewaters, when compared to more aggressive types of treatment. Constructed wetlands can be an alternative to more conventional biological treatment systems. The species *Phragmites australis*, *Typha spp.*, *Scirpus spp.* and *Phalaris arundinacea* are some of the plants frequently used in subsurface flow constructed wetlands.

The present study aimed at assessing the performance of constructed wetland systems operating in series for the treatment of wastewater derived from a tannery plant. Pilot units were operated with horizontal subsurface flow and planted with *Typha latifolia* and *Phragmites australis* in an expanded clay matrix. They were subject to two different hydraulic loadings: 180mm/d and 60 mm/d.

For an hydraulic loading of 180 mm/d, maximum removal efficiencies of 2100 KgCOD/had (48%) were achieved for unit 1 and 1500 KgCOD/had (33%) for unit 2. For an hydraulic loading of 60 mm/d, maximum removal efficiencies of 360 KgCOD/had (66%) were achieved for unit 1 and of 250 KgCOD/had (60%) for unit 2. No significant differences in performance were found between units with different plant species.

### ACKNOWLEDGEMENTS

The authors thank to Dias Ruivo, Curtumes e Produtos Industriais, Lda

This work was supported by FCT, POCI/AMB/60126/2004, and a research grant to C.Calheiros (SFRH/BDE/15507/2004)

Filtralite was kindly offered by Maxit S.A.