The use of cork waste as a sorbent for pesticides and heavy metals generated during wine manufacturing process

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Keywords: cork waste, biosorbent, pesticides, heavy metals, water treatment, *Quercus suber*

Abstract.
The aim of this study was to evaluate the adsorption capacity of cork wastes for the pollutants generated during wine manufacturing process. Adsorption was focused on four pesticides (aldrin, chlorpyrifos, metalaxyl and tebuconazole) and two heavy metals (Cu (II) and Ni (II)). The final purpose is to use this natural adsorbent as a substrate of a constructed wetland to improve its efficiency as wastewater treatment system. The high efficiency of cork as a sorbent of these pollutants is shown by the fact that equilibrium contact time obtained was 40 minutes. The highest adsorption capacities were exhibited for chlorpyrifos in the case of pesticides and for Ni (II) in the case of heavy metals. Experimental constructed wetlands filled with cork showed great removal efficiencies for these pesticides (more than 95%).
This study demonstrates that cork waste is a potential sorbent for some pesticides and heavy metals and may have relevance in the future treatment of pollutants-contaminated waters.

Acknowledgments. This study has been carried out within the framework of the LIFE project ECORKWASTE, LIFE14 ENV/ES/000460.

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