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## **BIOFILTER BEHAVIOUR IN CONTAMINATED SOILS BY UNTREATED PAPER SLUDGE: CRITICAL ISSUES AND DURABILITY**

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### **Abstract**

The presence of uncontrolled biogas in old or run out landfills and in recovered sites with untreated paper sludge can lead to diffused methane emissions towards atmosphere during years.

Actually biocover, biowindow and biofilter systems have been developed to intercept and bioconvert methane into CO<sub>2</sub>, to reduce the emissions of greenhouse gases towards atmosphere contributing to a reduction of the environmental impact. Furthermore this fraction of CO<sub>2</sub> has not to be accounted according to Kyoto Protocol, because it derives from organic matter. Bioconversion is performed by microorganisms, often contained in soils or in tailored composts. Standards for compost to be used as biocover are defined in Austrian legislation.

This work describes a case history, of recovered site with untreated paper sludge which caused uncontrolled biogas production. A specific bioremediation treatment was performed, with also the use of biofilters in order to intercept and bioconvert methane. These interventions must last for years and therefore it is necessary to verify that the reduction of the methane concentration and emission is kept down to acceptable levels over time, in an efficient way. The results of 4 years monitoring of biofilters are reported.

The aim of this work is to adopt techniques for monitoring and control in the long run biofilter behaviour with reference to bioconversion. A correct monitoring system can also suggest the need for any “charge”, even timely.

*Key words:* bioconversion, biofilter, paper sludge

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