



“Gheorghe Asachi” Technical University of Iasi, Romania



TOLUENE BIOFILTRATION AS AFFECTED BY RYEGRASS ROOTS

Zhongjun Xu*, Yanyun He, Jinggang Wang

Beijing University of Chemical Technology, Department of Environmental Science and Engineering, Beijing 100029, China

Abstract

Gaseous toluene biofiltration as affected by ryegrass (*Lolium perenne* L.) roots was investigated in this study. The results revealed that the populations of bacteria, actinomycetes were larger in the ryegrass rhizosphere than in the bulk soil since ryegrass provided root exudates as major nutrients available for the microorganisms. An increase in the microbial populations in a ryegrass-growing biofilter would significantly stimulate toluene biodegradation in comparison with a vegetation-free biofilter. The stimulation of toluene biofiltration by ryegrass roots increased with enhancing temperature in the range of 5-35°C. Elevating light intensity can increase toluene removal efficiency in the ryegrass-growing biofilter while the efficiency in the vegetation-free biofilter was invariable with the change of light intensity.

Key words: biofiltration, microorganisms, ryegrass, toluene

Received: April, 2014; *Revised final:* September, 2014; *Accepted:* October, 2014; *Published in final edited form:* August, 2018

* Author to whom all correspondence should be addressed: e-mail: xuzj@mail.buct.edu.cn; Phone: +86 10 64427356; Fax: +86 10 62082586