Environmental Engineering and Management Journal *May 2012, Vol.11, No. 5, 1023-1028*
http://omicron.ch.tuiasi.ro/EEMJ/

"Gheorghe Asachi" Technical University of Iasi, Romania

EXPERIMENTAL RESEARCH ON FLOW AND SOLUTE TRANSPORT IN HETEROGENEOUS SOIL SAMPLE

Anişoara Ungureanu[1*], Florian Stătescu[1], Michal Sněhota[2], Martina Sobotková[2]

[1]"Gheorghe Asachi" Technical University of Iaşi, Faculty of Hydrotechnical, Geodesy and Environmental Engineering Hydroameliorations and Environmental Department, 103-106 Dimitrie Mangeron Street, Iaşi, România
[2]Czech Technical University in Prague, Faculty of Civil Engineering, 7 Thakurova, 166 29 Prague, Czech Republic

Abstract

Flow and solute transport are influenced by variation of initial water content in soil. The aim of this research was to evaluate the results of ponded infiltration experiments developed in laboratory, consisting in three runs with constant pressure head in the top and seepage face at the bottom of soil column. The undisturbed soil was collected from experimental site Korkusova Hut, Czech Republic. For observation of the internal structure of soil was utilized one high-performance computer tomography. The CT images reveal the morphology of potential preferential pathways. The bromide ion breakthrough curves (BTC) was measured by an electrochemical in-line analysis, continuously during the steady state flow. The results obtained shows the variation in time of solute dispersion with initial water saturation.

Key words: infiltration experiments, solute transport, undisturbed soil sample, water flow, X-ray computed tomography

Received: January 2011; Revised final: March, 2012; Accepted: March, 2012

[*] Author to whom all correspondence should be addressed: e-mail: ana_25_is@yahoo.com; Phone: +40747459965