



Study on contaminant mass removal by soil vapor extraction

Chiu-Shia Fen

Department of Environmental Engineering and Science, Feng Chia University, Taichung, Taiwan, ROC (csfen@fcu.edu.tw)

Soil vapor extraction (SVE) is an effective remediation technology for removal of volatile organic compounds (VOCs) in unsaturated zones, particularly for high permeability soils. However, due to the nature of soil heterogeneities in most of the subsurface systems, the performance of SVE systems may be affected. Radius of influence (ROI) is usually evaluated at sites by measuring vacuum pressures of subsurface systems or through judging from the magnitudes of soil permeabilities. Within the area of a ROI, it is usually believed that the vaporized VOCs can be effectively removed from soil pores. Besides, it has been discussed whether continuous or pulsed venting operations is efficient for contaminant mass removal. The purpose of this study is to assess the relationships of subsurface vacuum pressure, pore gas velocity and contaminant mass removal rate from a venting well. A multiphase flow and multicompositional contaminant transport model will be applied to various scenarios of soil heterogeneities with different strategies of venting operation. We are, in an attempt, to find out controlling factors affecting the efficiency of contaminant mass removal from a venting well.