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" Research and Application of Leachate-LFG Migration and Collection in MSW Landfills "

by

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Abstract

Landfill gas (LFG) emission and explosion, leachate leakage and diffusion, deformation and stability are the main concerns in municipal solid waste (MSW) landfills recently. These problems are closely related to the migration and blocking of leachate and LFG. In this study, two-dimensional LFG flow analytical models are developed for layered landfills with horizontal or combined LFG collection systems. An optimized design method is also proposed accordingly. Moreover, an axisymmetric numerical model incorporating MSW compression and leachate recirculation is established to describe the transient LFG flow in bioreactor landfills. The saturated-unsaturated leachate migration under different recirculation systems is also investigated using 3D numerical models. Some design parameters of leachate recirculation are evaluated and design guidelines for engineering application are proposed. The results show that it is important to keep a balance between the acceleration of landfill stability and the recovery efficiency of LFG.

Biography

Prof. Feng is currently a Professor in the Department of Civil Engineering of Tongji University in Shanghai. Prof. Shi-Jin Feng obtained his bachelor's degree in Civil Engineering in 1999 and master's degree in Geotechnical Engineering in 2002 from Xi'an University of Architecture and Technology. He received his Ph.D in Geotechnical Engineering in 2005 from Zhejiang University. His research is mainly focused on the geoenvironmental engineering and soil dynamics. He has published more than 110 conference and journal papers. As project head and coordinator, Prof. Feng worked on more than 10 provincial and ministerial projects, including 6 ones supported by the National Natural Science Foundation of China (NSFC). He was awarded by NSFC as the Excellent Young Scholar in 2012. He is also a chief young scientist of National Key Basic Research Program of China (973 Program, 2014). Recently, he is rewarded as the Yangtze River young scholar by the Ministry of Education of China.

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