Geophysical Research Abstracts
Vol. 19, EGU2017-9110, 2017
EGU General Assembly 2017

Bioleach: a mathematical model for the joint evaluation of leachate and biogas production in urban solid waste landfills

Maria-Elena Rodrigo-Clavero and Javier Rodrigo-Ilarri

Universitat Politècnica de València, Institute for Water and Environmental Engineering, Hydraulic Engineering and Environment, Spain (marodcla@gmail.com)

One of the most serious environmental problems in modern societies is the management and disposal of urban solid waste (MSW). Despite the efforts of the administration to promote recycling and reuse policies and energy recovery technologies, nowadays the majority of MSW still is disposed in sanitary landfills.
During the phases of operation and post-closure maintenance of any solid waste disposal site, two of the most relevant problems are the production of leachate and the generation of biogas.
The leachate and biogas production formation processes occur simultaneously over time and are coupled together through the consumption and/or production of water. However, no mathematical models have been easily identified that allow to the evaluation of the joint production of leachate and biogas, during the operational and the post-closure phase of an urban waste landfill.
This paper introduces BIOLEACH, a new mathematical model programmed on a monthly scale, that evaluates the joint production of leachate and biogas applying water balance techniques and considers the management of the landfill as a bioreactor. The application of such a model on real landfills allows to perform an environmentally sustainable management that minimizes the environmental impacts produced being also economically more profitable.