

The system dynamics modeling of geo-synthetic clay landfill liners

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The effectiveness of geo-synthetic clay (GC) material as landfill liners using the system dynamics modeling approach is the focus of this paper. Study area is the Local Government Area (LGA)s in Ogbomosoland of Oyo State, Nigeria. These five LGAs include the urban (Ogbomoso North and Ogbomoso South) and rural (Oriire, Ogo Oluwa and Suurulere). The properties of focus on the material were hydraulic conductivity, porosity, thickness and placement slope. A mathematical model was developed by applying the governing equations coded in Visual Basic Computer programming Language. This model was validated with field data collected on the study area. The interrelationship of the properties and the breakthrough times for GC liner was found through the STELLA 9.1.4 software application. It was discovered from this research that GC liners were more effective in urban than rural LGAs. The GC liner is therefore recommended for use as landfill liner in the urban LGAs of the study area.

Biography

Ojoawo was appointed as a Graduate Assistant by Ladoke Akintola University of Technology in December 1998, and has been an Academic Staff in the Department of Civil Engineering of LAUTECH since then till date, he rose through the ranks and is presently a Senior Lecturer in the University. He was the Acting Head of Civil Engineering Department for 2 years between 2006 and 2008. Member of University Senate (2006 to 2008); Member, Faculty of Engineering and Technology's Board of Examiners (2006-2008); Member, Nigerian Society of Engineers (2003 till date); Member, Nigerian Institution of Civil Engineers (2005 till date); Associate Member, American Society of Civil Engineers (2001 till date) and a registered engineer by COREN (2004 till date). He is currently the Chairman of the University's Freshers Orientation Committee, a position he has occupied since August 2010. He has many publications in both Local and International reputable Journals. As at the last count he has over 20 published articles to his credit. He is equally the author of two popular books; "Contemporary Civil Engineering Practice" and "Rudiments of Civil Engineering Hydraulics". In addition, he has supervised over 60 final year B.Tech projects since he started University Lecturing job in 1998. As a registered Civil Engineer, he has participated in the design and construction/supervision of over 30 completed projects in Nigeria. He has presented academic papers at International Conferences on Water Resources and Environmental Engineering outside the shores of Nigeria. This includes International Conference on Emerging Trends in Engineering, Nitte, Karnataka State, India; International Conference on Environmental Technology: Today and Tomorrow, Ahmedabad, Gujarat State, India; International Conference on Environmental Pollution and Remediation, Ontario, Canada; among others. He is a recipient of so many awards which include the Guest of Honour's Award from the NMAM Institute of Technology, Udipi District, Karnataka State, India.

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