



Geosynthetics in landfills and related containment applications



Strategic Partner



Thursday, November 07, 2019

Training Venue

AUD | AMERICAN
UNIVERSITY
IN DUBAI
School of Engineering



Introduction

This short course is designed to provide the most recent findings from research and the state-of-practice to both expert practitioners and novices in the use of geosynthetics in liner systems. Following an overall introduction (including objectives, limitations, basic concepts and example applications), the course material then focuses on geotextiles and geonets in drainage layers, geosynthetic clay liners (GCLs) and geomembranes (GMBs). Important new findings on the performance of exposed GM/GCL composite liners and the durability of GMs under realistic exposure conditions will be presented. Particular attention is given to identifying factors that may impact how long these geosynthetics may perform their intended function (i.e. their service life). Emphasis is also given on the need to consider the interaction of both geosynthetic and soil components of the overall system to ensure adequate barrier performance.

Training Contents

1 Introduction – basic concepts

- Objectives and limitations
- Theme
- Materials used liners and drainage layers
- Example applications
- Cover systems
- Barriers systems
- Transport mechanisms for liquids and gases
- Temperature

2 Drainage layers and Leachate Collection Systems

- Geosynthetic drainage layers
- Long term performance of leachate collection systems
- How to use (and NOT use) geotextiles in LCS systems

3 Geosynthetic Clay liners (GCLs)

- Factors affecting long-term performance
- Effect of method of GCL manufacture
- Hydration and Hydraulic conductivity of GCLs
 - Effect of stress
 - Cation exchange
 - Compatibility – hydraulic conductivity
 - Internal erosion
- Overlaps
- Diffusion through GCLs (aqueous)
- Gas migration through GCLs

4 HDPE Geomembranes (GMBs)

- Material characteristics
- Processes affecting short-term performance- leakage
- Long-term performance
 - Factors affecting long term performance
 - Conventional immersion tests – MSW [OIT]
 - Effect of GMB thickness [OIT]
 - Service life for GMB in MSW
 - Service life of secondary GMB in MSW
 - Effect of temperature history on SL for MSW
- Diffusion through GMBs

5 Composite liners performance and issues

- Diffusion through composite liners
- Protection of composite liners
- High stresses – heap leach pads
- GM wrinkling/waves
- Temperature effects on CCLs and GCLs in composite liners (shrinkage and desiccation)
- Leakage through composite liners
- Effect of composite liner behaviour on GM service life

6 Contaminant transport predictions/modelling

7 Equivalency of GCLs and CCLs

8 Stability

- General Stability considerations
- Some properties
- Liner stability
- Veneer/cover stability

9 Construction Issues

10 Conclusions

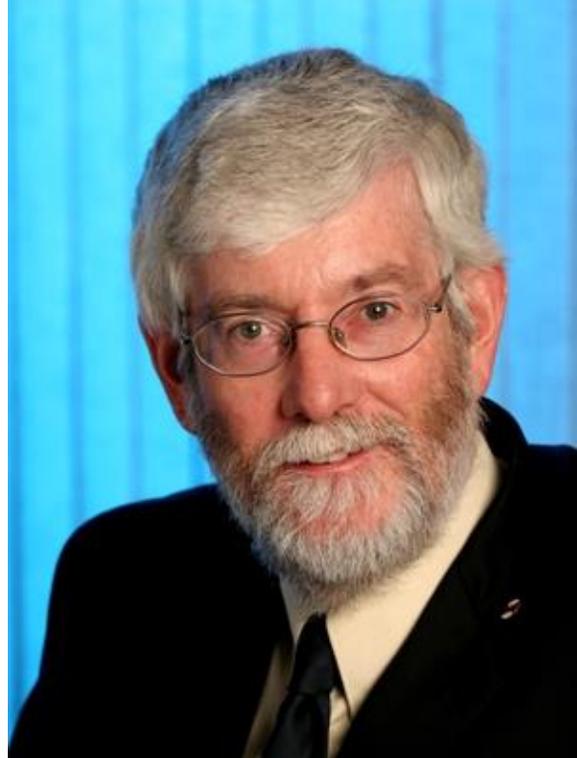
Meet the Speaker

- Dr Rowe is one of the pioneers of geosynthetics and geoenvironmental engineering and is named as a fellow of the Canadian Royal Society for his scientific accomplishments. He has more than 600 publications and two books under the title :-

- Barrier Systems for Waste Disposal Facilities (Lead author) Spon Press, London 2004
- Geotechnical and Geoenvironmental Engineering Handbook for Kluwer Academic Publishers. Editor

- Some of Dr Rowe's honour's (among others):

- 2001: Fellow of the Royal Society of Canada
 - 2004: Killam Prize, awarded by the Canada Council
 - 2005: Rankine Lecture to the British Geotechnical Association
 - 2012: Sir John Kennedy Medal of the Engineering Institute of Canada
 - 2013: elected a Fellow of the Royal Society
 - 2014: Thomas Telford Gold Medal of the Institution of Civil Engineers
 - 2015: Miroslaw Romanowski Medal of the Royal Society of Canada
 - The Queen Elizabeth II Diamond Jubilee Medal
 - R.F. Legget Medal
 - ICE's Thomas Telford Gold Medal
 - RSC's Miroslaw Romanowski Medal
- Plus the R. Kerry Rowe Lecture, created by the International Society for Soil Mechanics and Geotechnical Engineering



R. Kerry Rowe

Professor and Canada Research Chair in Geotechnical and Geoenvironmental Engineering
Geoengineering Centre at Queen's-RMC and Department of Civil Engineering Queen's University



Training Package

- Training Course Manual & stationary
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Training Fees

500 AED All inclusive

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