Geosynthetics Interest Group of South Africa

Presents a 2 day short course on:

Geosynthetics in bottom liners and covers for use in lagoons, secondary containment, landfill and mining applications

by Professor R. Kerry Rowe

6 -7 September 2011
Centurion Council Chambers

Sponsored by:

Jones & Wagener
Consulting Civil Engineers

KAYTECH
ENGINEERED FABRICS

AQUATAN
LINING SYSTEMS

Who should attend

- Environmental Impact Assessors/Risk Managers/Design Engineers
- Specifying/Certifying Engineers
- Construction/Quality Assurance Project Managers
- Installers/Contractors
- Third Party Inspectors
- Regulators
- Material Manufacturers/Suppliers

Why you should attend

Geosynthetics are increasingly being used in containment facilities in South Africa. Their use is set to increase when the proposed regulations in terms of the Waste Act, specifying new waste facility liner requirements,
are promulgated.

This short course will offer insight into the state of the art use of geosynthetics in containment facilities, presented by a world authority. If you are involved in the design, approval, construction or operation of containment facilities, you cannot afford to miss this short course.

Continuous Professional Development

Accreditation of 2 CPD points is pending and will be finalised following the course. Refer to www.gigsa.co.za for confirmation end October 2011.

Timing

Registration starts at 8am on 6 September 2011.
Cocktail party scheduled for 5pm on 6 September 2011.
Course runs from 8:30 - 17:00 on 6 and 7 September 2011.

Contact

For more information, please contact Riva Nortje on nortje@jaws.co.za
or +27 11 519 0283.

CV: R. Kerry Rowe, Ph.D., D.Eng., FREng, FRSC, FCAE, FEIC, P.Eng.

Educated at The University of Sydney, Australia, Dr. Rowe worked as a geotechnical engineer with the Australian Government Department of Construction prior to emigrating to Canada in 1978. He spent 22 years as a professor, including 8 years as Chair of the Department of Civil and Environmental Engineering, at The University of Western Ontario, London, Canada.

He served as Vice Principal (Research) at Queen's University from 2000-2010. He is presently a Professor of Civil Engineering and holder of the Canada Research Chair in Geotechnical and Geoenvironmental Engineering at Queen's University in Kingston, Canada.

His research and consulting have been in the fields of Geotechnical, Geosynthetic, Hydrogeologic, Landfill and Geoenvironmental Engineering. He is the lead author of the book "Barrier Systems for Waste Disposal Facilities", and editor of the Geotechnical and Geoenvironmental Engineering Handbook for Kluwer Academic Publishers, and has more than 400 publications in refereed journals, conferences and books.

GIGSA:

The society represents those persons involved or interested in the promotion and advancement of the state of the art of geosynthetics and their applications. The aims of GIGSA include to:

- Present geosynthetic educational events
- Disseminate geosynthetics knowledge
- Enhance understanding of geosynthetics and use
- Advance geosynthetics state-of-the-art
- Pursue standardisation in geosynthetics

Courses will also be presented by Prof R. Kerry Rowe in:

- Windhoek, Namibia – 12 September 2011.
  Geosynthetics in bottom liners and covers with emphasis on use in mining applications
  (contact peter@kaytech.co.za)

- Chingola, Zambia - 14 September 2011.
  Geosynthetics in bottom liners and covers with emphasis on use in mining applications
  (contact hein@aquatan.co.za)

Short Course Outline

Introduction

- Objectives and limitations
- Theme
- Basic concepts (material, liners, transport mechanisms for liquids and gases)
- Barriers and drainage layers
- Example applications – types of fluids to be retained and issues related to different applications
- Wrinkles
- Temperature
- Need to take a systems view

Drainage layers and Leachate Collection Systems (LCS)

- Geosynthetic drainage layers (where to use and not use; some issues to consider)
- Long term performance of leachate collection systems
- How to use (and NOT use) geotextiles in LCS systems

Geosynthetic clay liners (GCLs)

- Factors affecting long-term performance
- Effect of method of GCL manufacture
  - GCL Bulk voids ratio
  - GCL Water retention curve (WRC)
  - GCL Hydration
- Hydraulic conductivity of GCLs
  - Effect of stress
  - Cation exchange
    - Concept
    - Benson's cases
    - Other experience
  - Compatibility – hydraulic conductivity
  - Internal erosion
- Overlap seams
- Gas migration through GCLs
- Diffusion through GCLs (aqueous and gaseous phases)
- GCL in slopes (anchorage, stability)
  - Short and long-term interface and internal shear strength
  - Effect of hydrocarbons on peel strength
  - Slope stability calculations
  - Anchor trenches

HDPE Gomembranes (GMBs)

- Material characteristics
- Long-term performance
  - Factors affecting long term performance
  - Exposed GMBs (UV, damage)
  - Conventional immersion tests [OIT]
  - Effect of GM thickness [OIT]

- Service life for leachate immersion
- Service life of secondary GMBs
- Effect of temperature history on SL
- Low level radioactive waste
- Mining applications

- Diffusion through GMs
- GMs in slopes (anchorage, stability)
  - Short and long-term interface and internal shear strength
  - Slope stability calculations
  - Anchor trenches

Construction Issues

- General issues
- Construction with GCLs
- Construction with GMBs
- Constructing multi-layered systems
- Lagoons

Material specification and CQC/CQA + Lab testing

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

Equivalency of GCLs and CCLs

Contaminant transport predictions/modelling

Geosynthetics Interest Group of South Africa
(Est 1994)

The South African Chapter of the International Geosynthetics Society.
In association with the South African Institution of Civil Engineering.
NPO Registration Number: 55-653-NPO

Course Information

Registration Fees for the Gauteng short course are:

Member Rate:	**R 1 750.00**
Non-Member:	**R 1 950.00**
Retired / Academic:	**R 500.00**
Student:	**R 500.00**

Teas, lunch and cocktail party are included.

Please visit our website to view all the venue and course details:
www.gigsa.co.za

Course Application *(please PRINT all information)*

Title: ☐ Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Prof ☐ Other.....

First Name:.....

Surname:.....

Organisation:.....

Position/Title:.....

Postal Address:.....

.....Code:.....

E-mail:.....

Telephone:.....

Please send this form, together with your payment confirmation made out to GIGSA, to:

Kerry Rowe short course:
c/o Debbie Tinkler
Tel: +27 11 974 5271 | Fax: +27 11 974 4111 | E-mail: dtinkler@aquatan.com
If an invoice is required for payment, please contact Debbie Tinkler.

Banking details:
GIGSA
Nedbank Midrand | Account number: 168 606 0343 | Branch code: 168 642

Benefactors:

Gigsa is dedicated to the Scientific and Engineering Development of Geotextiles, Geomembranes, Related Products and Associated Technologies

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