

Protecting the environment with geosynthetics

(The 53rd Karl Terzaghi Lecture)

14.30

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Room 601, Skempton Building, Imperial College London, SW7 2BU

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Abstract

Geosynthetics are now widely used to contain fluids and protect the environment. Applications include most modern landfills, lagoons for contaminated fluid and drinking water, dams, and mining applications such as heap leach pads and in tailings storage facilities where loss of fluid to surface water or groundwater must be minimized. These systems often involve a single liner with welded panels of geomembrane liner, a geosynthetic clay liner, or a composite liner with a geomembrane over a clay liner. For large landfills or other higher-risk applications, a double liner system with a geocomposite or granular drain between two liners is used. Most frequently designs have used materials that meet a minimum set of commonly specified index parameters. This lecture draws together field observations, long-term experimental data, and theory to show how, and why, these systems have worked so well while highlighting the importance of design and construction considerations that, if overlooked, can cause problems. It then discusses the means of avoiding pitfalls.

Dr. R. Kerry Rowe - P.Eng., FRS, NAE, FREng, FRSC, FCAE, FEIC

Holds the Canada Research Chair in geotechnical and geoenvironmental engineering at Queen's University in Kingston, Canada. Author of over 350 refereed journal papers, 3 books, 15 book chapters, and more than 330 full conference papers, he has extensive research and consulting experience in geosynthetics, waste management and geoenvironmental engineering including the design and/or peer review of hydrogeology and/or design for more than 60 landfills in Canada, US and other countries. He was the key advisor developing technical aspects of regulations in a number of countries. In addition to landfills, his long list of projects includes remediation of PCB contaminated soil in the Canadian Arctic; the remediation of hydrocarbon contaminated soil in the Arctic and Antarctic; and liners for mining applications. He has been recognized by numerous awards including the *Giroud Lecture* (2002), *Rankine Lecture* (2005), *Casagrande Lecture* (2011), and the *ASCE Karl Terzaghi Lecture* (2017). The *International Society for Soil Mechanics and Geotechnical Engineering* has created the *ISSMGE R. Kerry Rowe Lecture*. He has been elected a Fellow of the *Royal Society*, a foreign Member of the *U.S. National Academy of Engineering*, Fellow *UK Royal Academy of Engineering* and both the *Royal Society of Canada* and the *Canadian Academy of Engineering* as well as Professional Societies in Australia, Canada, and USA. He is a past president of the *International Geosynthetics Society*, the *Canadian Geotechnical Society* and the *Engineering Institute of Canada*.

The lecture is open, free of charge, to both external guests and College members. Please e-mail s.feller@imperial.ac.uk if you would like to attend.