

Outline for a Session at the 3rd Intercontinental Landfill Research Symposium

Session leaders: **Dr. Jeremy Morris (GeoSyntec Consultants, USA)**
 Dr. Morton Barlaz (North Carolina State Univ., USA)

Topic: **Long-Term Landfill Management and Post-Closure Care**

Overview

Most international MSW landfill regulations (e.g., the U.S. Subtitle D regulations) specify a 30-year (or similar) post-closure monitoring period unless this period is extended by the regulatory agency on a site-specific basis. The implication is that monitoring will be discontinued after 30 years because the landfill is stable and no longer represents a threat to the environment. However, technical criteria with which to define stability are lacking. This lack of criteria will make it difficult for regulators to make decisions to either extend or reduce the post-closure monitoring period. The need for criteria on stability is further intensified by the increased interest in the operation of landfills as bioreactors, in which waste decomposition is accelerated. Partly in response to defining operational ‘end-points’ for bioreactors, it has been suggested that defining stability should go further than simply attempting to meet a set of (probably unattainable) technical criteria. Alternative strategies and procedures for demonstrating ‘landfill stability’, in which a landfill is considered to be in a stable situation when it no longer presents an unacceptable threat to the environment, have been proposed, for example by the Solid Waste Association of North America (SWANA) Bioreactor Committee. The acceptance and application of these alternative approaches for defining stability will have considerable implications for long-term landfill management and post-closure care.

Any country with landfills must develop a strategy for their long-term management. Alternatives range from “walk away after some specified time” to perpetual care. The objective of this session is to develop strategies for the long-term management of landfills that are technically defensible and protective of the environment. This session will focus on new and innovative strategies for defining landfill stability and post-closure care, the use of environmental impact analysis, regulatory considerations, and innovative approaches for measuring landfill or waste stability.

Questions to be Addressed

1. How best can ‘landfill stability’ be defined and measured, and should work be done to accelerate the stabilization of closed landfills?
2. Can post-closure monitoring be reduced or suspended before the waste is completely decomposed, and, if not, then what does “completely decomposed” mean?
3. What attempts have or are being made to develop technically defensible approaches to defining the duration of post-closure? Is an approach based on environmental impact assessment useful?
4. Can an approach developed for MSW landfills be extended to other types of landfills that contain primarily ash, construction and demolition debris, or other inorganics?

Schedule and Participants

This 2½ hour session will be divided into two focused shorter sessions, each one comprising presentations and a case study, and will be concluded with an open discussion, closing summary, and suggestions for session outputs. Presentations will be supported by posters.

Introduction to the Topic and Historical Perspective: 5 minutes

Morton Barlaz (USA)

Measuring Landfill Stability: 40 minutes

1. “*Availability of resistivity monitoring for interpreting stabilization of landfills*”, Kazuo Kamura, Yu Hara, Bulent Inanc, Yuzo Inoue, & Yusaku Ono (Japan): 10 minutes.
2. “*Evaluation of the long-term variation of waste landfills by microbiological characteristics*”, Tomonori Ishigaki, Tae Ho Lee, Hiromi Sawamura, Shino Mohri, Masato Yamada, & Yuzo Inoue (Japan & Korea): 10 minutes
3. Case Study: “*Study to evaluate stabilization of municipal waste landfills*”, Myung Sook Jung, Chan Ki Shin, Dong Gil Ryu, & Ji Hwan Son (Korea): 10 minutes

Questions and discussion: 10 minutes

Approaches for Defining Long-Term Landfill Behavior and Post-Closure Care: 40 minutes

1. “*Numerical modeling of long-term behavior of waste in landfill*”, Yasumasa Tojo, Nobutoshi Tanaka, Toshihiko Matsuto, and Masahiko Oosako (Japan): 20 minutes
2. Case Study: “*Case study application of a performance-based system for post-closure care at MSW landfills*”, Jeremy Morris, Michael Houlihan, Morton Barlaz, Pat Sullivan, Steve Clarke, Robert Gibbons, & Ed Repa (USA): 20 minutes

A report providing background and procedural information for the performance-based system developed for the project in the presentation by Morris, et al. will be made available on the ICLRS web site as a PDF file by 31 October 2004, and participants will be invited to read it in preparation for the session.

Open Discussion: 60 minutes

The open discussion portion of the session will be initiated by a 5 minute presentation from Morton Barlaz of a proposed new definition for landfill stability developed by the SWANA Bioreactor Committee (USA).

Closing Summary & Suggestions for Session Outputs: 5 minutes