



Chemical Engineering & Applied Chemistry  
UNIVERSITY OF TORONTO

## SPECIAL SEMINAR ANNOUNCEMENT



### DR. MORTON BARLAZ

*Distinguished University Professor and Head of the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. Dr. Barlaz has been involved in research on various aspects of solid waste since 1983. Over this time, he has conducted research on biological refuse decomposition, methane production, and the biodegradation of hazardous wastes in landfills. He has participated in two state-of-the-practice reviews of bioreactor landfills. His research forms the basis for much of the work done to assess the impact of landfills on methane emissions inventories. Dr. Barlaz is also recognized for his research on the use of life-cycle analysis to evaluate environmental emissions associated with alternate solid waste management strategies.*

## Title: A Model to Describe Heat Generation and Accumulation in Solid Waste Landfills

There have been reports of North American landfills that are experiencing temperatures in excess of 100 °C. However, the processes causing elevated temperatures are not well understood. The objective of this study was to develop a model to describe the generation, consumption and release of heat from landfills, to predict temperatures in a completely mixed landfill volume, and to understand the relative importance of factors that contribute to elevated temperature landfills (ETLFs). Heat sources considered include energy from aerobic and anaerobic biodegradation, anaerobic aluminum and iron corrosion, ash hydration and carbonation, and acid-base neutralization. Heat removal processes include landfill gas convection, infiltration, leachate collection, and evaporation. Model predictions indicate that both anaerobic aluminum corrosion and ash hydration/carbonation contribute to landfill temperatures above those estimated from biological reactions alone.

The second part of this seminar will provide a brief overview of other areas of solid waste research conducted in my research group.

**Tuesday, September 12, 2017 at 3:00pm to 4:00pm**  
**Room 407, Wallberg Building, 200 College Street**

**BioZone**

Centre for Applied Bioscience and Bioengineering