Landfill Research at the University of Calgary

Summary: The philosophy of landfill disposal of solid waste in Canada is changing. With these changes, there is a greater need to undertake research to support field implementation of new concepts. University of Calgary researchers, led by Dr. Patrick Hettiaratchi, is undertaking leading edge research to solve leachate and landfill gas related problems. One such research program involves the use of a naturally occurring bacterium to control landfill methane emissions into the atmosphere. This research program involves laboratory experiments, development of mathematical models and field research. The aim is this research to develop a technology known as methanotrophic biocovers (MBCs) for application at a variety of landfill types in developed and developing countries. This new technology is relatively inexpensive and unsophisticated; therefore could be applied with minimal changes to current practice. Another research program involves the study of leachate hydrology. Leachate “day-lighting” is a common occurrence in bioreactor landfills and landfills receiving wet waste under humid conditions. Associated problems with this phenomenon could cause major headaches to operators and safety problems. This program is designed to understand the leachate migration behavior in landfills and develop operational techniques to minimize associate problems. The research components include laboratory experiments and mathematical modeling. Based on the research, design and operation guidelines are being developed for application at various types of landfills.