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Ling Tau Chuan

University of Malaya, Malaysia

Treatment of landfill leachate via advanced biological treatment technology

Sanitary landfill is the most common solid waste management globally. The key success of a sanitary landfill depends on its leachate management. In biological treatment technology, anaerobic and aerobic processes are promising methods to treat the biodegradable matters especially biochemical oxygen demand (BOD) and ammoniacal nitrogen. While this conventional method is still practiced currently, emerging new, non-conventional methods have also been developed. Therefore, instead of heterotrophic denitrification procedure, autotrophic denitrification was found as a substitute method to treat wastes with little carbon content and high nitrogen content. In this paper, it is shown that targeting the respective parameters for the removal of the leachate is the key selection of biological processes. Aerobic methane oxidation coupled to denitrification (AME-D) and partial nitritation–anammox processes are among the widely studied technologies for the biological treatment processes. Studies on the microbial activity and metabolism related to the biological treatment technology should be a future field of study for the researchers to optimize the leachate treatment process. With the integration of biological process in the leachate treatment, the effluent discharge could be treated in a shorter time and it may represent potential novel pathway for the organic content and nitrogen removal.

Biography

Ling Tau Chuan is Professor of Biotechnology in the Institute of Biological Sciences, University of Malaya. He has published over 140 research papers in a wide range of scientific journals, as well as reviews and patents in the fields of Downstream Processing and Bioprocess Engineering. He has received major grants from the university, the Ministry of Science Technology and Innovation (MOSTI) of Malaysia, and the Ministry of Higher Education Malaysia (MOHE). His work has also been funded directly by the industry. Currently, he serves as the Co-Editor in Chief for *Current Biochemical Engineering*.

tcling@um.edu.my