

**ANAEROBIC/AEROBIC TREATMENT OF MUNICIPAL
LANDFILL LEACHATE**

By

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DECLARATION BY THE CANDIDATE

I (Nur Azwa Binti Muhamad Bashar, 2006878680) confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.



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ABSTRACT

The generation rate of solid waste has been increasing annually, resulting in the increase of solid waste to be disposed at landfills in most countries worldwide including Malaysia. Associated with the increasing of municipal solid waste is the production of municipal landfill leachate. Jeram Municipal Landfill (JML) managed by Worldwide Landfill Sdn Bhd is one type of sanitary landfill that involve in the management of solid waste and treatment of municipal landfill leachate. The discharge requirement for JML is standard A, however at present due to the insufficient electrical supply, the leachate treatment failed to achieve the standard required. Therefore, an alternative treatment process involves the changing of anaerobic/aerobic conditions was conducted. The treatment was applied to the leachate samples collected from the JML. This study was carried out to characterize leachate and to evaluate the changes of selected bulk parameters, anions and cations concentration when leachate is subjected under anaerobic/aerobic condition. The continuous anaerobic and aerobic condition was allowed for 5 days and 6 hours respectively. The in situ and laboratory testing were conducted to establish the result. Throughout the experiment, anaerobic/aerobic treatment was able to reduce 78 % and 67 % of COD and TSS respectively. As the initial pH is 5.15, leachate from JML is categorized under acitogenic leachate. The anions shows very high reduction of F^- , PO_4^{3-} and SO_4^{2-} at 98 %, 90 % and 82 % respectively while a high, medium and small reduction of Br^- , Cl^- , NO_2^- and NO_3^- at 53 %, 42 %, 27 % and 14 % respectively. The cations shows significant removal of Li^+ , NH_4^+ at 68 %, 43 % and 11 % respectively and Ca^{2+} except for Na^+ , K^+ and Mg^{2+} increased to 8 %, 4 % and 2 % respectively. It is concluded that there are a changes when leachate is subjected under anaerobic/aerobic condition.

Keywords: *acitogenic leachate, aerobic treatment, anaerobic treatment, COD, municipal landfill leachate*

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