



**Faculty of Science  
Microbiology department**

# **Treatment of Landfill Leachate by Using Certain Types of Bacteria**

**Thesis Submitted in Partial Fulfillment of the  
Requirements for the Master Degree (M.Sc.) of  
Science in Microbiology**

**By**

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**To**

**Microbiology Department  
Faculty of Science  
Ain-Shams University  
2011**



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**Faculty of Science  
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## معالجة العصاراة الناتجة من مقالب المخلفات الصلبة باستخدام أنواع معينة من البكتيريا

رسالة مقدمة كجزء متطلب للحصول على درجة الماجستير في  
العلوم تخصص (ميكروبيولوجي)

رسالة مقدمة من  
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### **Abstract**

Sanitary landfill is a process in the solid waste management system. It can be defined as “a method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day’s operation or at such more frequent intervals as may be necessary.” Leachate can be defined as liquid that passes through the landfill and has extracted dissolved and suspended matter from it. Leachate results from precipitation entering the landfill and from moisture that exists in the waste when it is composed. Its generation is a major problem for municipal solid waste (MSW) landfills. In Alexandria city 2500 tons of solid waste produced per day this daily produces about 100 m<sup>3</sup> of leachate. If it is not collected and treated properly soil and ground water table shall be polluted and it might take years to be treated. In delta zone the problem becomes much extreme. For these reasons leachate treatment is considered an urgent issue. Since solid waste management becomes an essential issue and leachate is considered as very hazard, this study is done to apply innovation method that is low tech, simple in application, financially low cost and environmentally compatible.

The most potent ten effective microorganisms (EMs) were isolated and selected from landfill leachate by pour plate method. The Ems each organism separately could remove 29% to 45% of COD from leachate, 91% of BOD<sub>5</sub>, 62% to 71% from ammonia , 93% to 100% of nitrate and 68% to 86% from phosphorous . Mixing the four best selected strains did not show any

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## Abstract

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antagonistic activity between each other as their biodegradability did not reduced than the minimal capability of each isolate but it was sometimes exceeded the maximum ability of the highest effective microorganism.

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