

## **ANALYSIS OF LEACHATE TREATMENT TECHNOLOGIES**

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Despite the intensive efforts that are directed to the recycling and recovery of solid wastes, landfills remain and will remain an integral part of most solid waste management plans. One of the byproducts of the landfilling process is the generation of leachate. Once the precipitation occurs, the water percolates through the waste matrix in the landfill and several chemical and biological reactions are taking place. As a result, organic and inorganic compounds leach out from the waste leading to the formation of high strength wastewater known as leachate. Unless managed and treated properly, leachate will lead to adverse environmental impacts such as odor and groundwater contamination.

Various methods and technologies were proposed and applied to treat the landfill leachate. These methods are ranging from simple methods, such as recirculation of leachate through the landfill to a sophisticated process, such as combination of physical, chemical and biological processes. The applied treatment methods have various degrees of success. Some were very efficient in leachate treatment, while others were not. This variability in the treatment efficiency may be attributed to the fact that, the process designers are ignoring the temporal and spatial variation of the leachate characteristics.

This paper will review the methods of leachate treatment with special reference to the recent trends in treatment processes. The factors that affect the composition of leachate from a certain landfill such as, landfill age, waste composition and climatic conditions are discussed. The impacts of these factors on the selected treatment

technologies are identified. The information and analysis in this study will serve as guidelines for better decision making in selecting proper leachate treatment processes, so as to mitigate the adverse environmental impacts associated with the leachate generation.