

Biological leachate purification

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Introduction

Due to their high contaminant concentration, landfill leachate pose a great environmental problem. For this reason, all landfill operators are now required by law to work out a leachate purification scheme. An efficient and environmentally sound process of this kind has been developed and tested in Austria.

Research and development

In collaboration with the Technical University of Graz, the university institutes of Zagreb (Croatia), Stuttgart (Germany), Aix-la-Chapelle (Germany), and Toulouse (France) two years of research work were dedicated to the development of a leachate purification process.

Membrane bioreactor

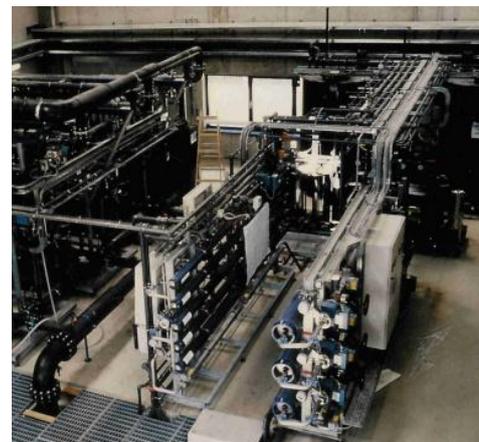
First, the leachate is drained through pipes running at the landfill bottom to the multi-stage purification unit. Organic carbon compounds, ammonium, and a large share of the halogenated hydrocarbons are converted to gaseous carbon dioxide and nitrogen with the help of bacteria. In order to cope with the great contaminant load, the unit must contain large quantities of bacteria, namely 20 to 30 grams per liter, which is seven times more than is contained in a conventional sewage purification plant.



To provide the microorganisms with a perfect environment, the liquid must be thoroughly mixed and oxygen must be added. This is done through an injection system. In order to avoid that valuable biomass is washed out along with the water, the microorganisms are entirely held back by means of a microfiltration technique and are then recirculated to the unit.



In a sequential step, the leachate is subjected to a reverse osmosis treatment to obtain pure water quality.



EnviCare® is able to offer years of knowledge in development, design, installation and operational practice of purification plants equipped with membrane technology.

We take care of your environment