

LIXI-1 Bioprocess

Biotreatment of Landfill Leachates

Problem description

COD, TOC and total inorganic nitrogen concentrations in landfill leachate often exceed the allowable discharge limits. The $\text{NH}_3 - \text{NH}_4^+$ concentration in landfill leachate often exceeds 1000 mg/l.

MADEP solution

MADEP has isolated bacteria and developed an application technique for the reduction of COD, TOC and total inorganic nitrogen concentrations in landfill leachate. The pollutants are incorporated into living bacterial biomass developed by MADEP for inoculation of landfill leachate. The biomass has excellent carbon and nitrogen assimilation rates and sedimentation properties. The bioprocess requires a simple reaction vessel and an aeration system. It can usually be adapted to the clients existing reaction vessel or flow equalization basins without significant costs in equipment.

Advantages

- TOC removal rate: 600 to 1300 mg/(liter * day)
- $\text{NH}_3 - \text{NH}_4^+$ removal rate: 250 mg/(liter * day)
- Excellent sedimentation properties
- Short (3 days) hydraulic retention time
- Low cost: Significant COD, TOC and nitrogen compound reduction with a small or without modification of existing treatment equipment (aerated basin)

