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REMOVAL OF PHTHALIC ACID DIESTERS IN THE MUNICIPAL SOLID WASTE INCINERATION PLANT LEACHATE TREATMENT PROCESS

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Abstract

The removal of phthalic acid diesters PAEs, specifically di-*n*-butyl phthalate (DBP) and di(2-ethylhexyl) phthalate (DEHP), from leachates of a municipal solid waste incineration plant treatment process was studied. The leachates originated from the adjusting unit, the biochemical unit, the ultrafiltration membrane unit, and the reverse osmosis membrane unit. The initial concentrations of DBP and DEHP were 250.5 and 332.3 µg/L, respectively, which were correspondingly reduced to 4.2 and 2.2 µg/L in the effluent, representing 98.3% removal of DBP and 99.3% removal of DEHP. DBP was removed stepwise during the process, mainly by degradation by microorganisms. Approximately 70.1% of the DEHP was removed by the membrane processes, owing to physical retention of the compound by the membranes. Large amounts of PAEs can accumulate over long periods of time in the concentrated leachate product, which may increase the difficulty of further leachate treatment and create greater environmental issues.

Key words: di-*n*-butyl phthalate, di(2-ethylhexyl) phthalate, leachate, removal efficiency

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