



Title: Effect of Temperature on the Performance of Limestone/Sandstone Filters Treating Landfill Leachate

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Abstract: The ability of limestone and limestone/sandstone filters to remove dissolved iron and manganese from landfill leachate under field conditions were investigated. The results showed that the precipitation of iron and manganese were affected by temperature and time. Most of iron was removed from solution within the first 10 min at 20oC while the removal of iron from solution took much longer time (50 min) at 5oC. Larger percentage (69%) of manganese was removed from solution within the first 20 min at 20oC compared to that (42%) removed at 5oC. Removal of manganese from solution was affected by the presence of iron while presence of manganese did not affect iron removal from solution. The lower removal efficiencies of manganese showed the slow kinetic of manganese oxidation. The iron and manganese removal rate constants of the limestone filters were higher than those of the limestone/sandstone filters. The pH of the water samples did not exceed 7.7. Therefore, the wetland ecosystem should be able to adjust to water having a slight alkalinity without suffering adverse effects.