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VARIATIONS OF COD/BOD_5 RATIO AT DIFFERENT UNITS OF A WASTEWATER STABILIZATION POND PILOT TREATMENT FACILITY

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ABSTRACT

The paper presents the COD/BOD_5 ratio fluctuations at the various treatment units of a pilot scale stabilization pond facility during a 3 year period (January 1998 - February 2001). The treatment facility comprises of an anaerobic pond followed by a facultative and two aerobic ponds in series, was constructed in 1996, 14km west of Thessaloniki. The mean value of COD/BOD_5 ratio of the raw wastewater was 2.07 as for typical untreated domestic wastes. Effluent from the anaerobic pond had a similar COD/BOD_5 ratio, maintaining a value of 2.05, as COD reduction rate (50%) was approximately the same with BOD_5 reduction (45%) after anaerobic treatment. The mean COD/BOD_5 at the exit of the pond system was 12.4 indicating that the biodegradability of the effluent wastewater was reduced due to enhanced biological organic matter removal by the aerobic degradation process, that was involved in the facultative and aerobic ponds. Cumulative BOD reduction in the facultative and aerobic ponds reached 90%, in comparison to 63% reduction of COD. The COD/BOD_5 ratio reflects the degree of treatment the wastewater has undergone. The combination of biochemical processes such as the anaerobic prevailing in the anaerobic pond and the aerobic that is mainly dominant in the facultative-aerobic ponds, generated a weak biodegradable effluent, indicating that the wastewater was treated sufficiently.