

## ABSTRACT

The performance evaluation of a wastewater treatment plant is carried out to determine whether effluent standards for a particular jurisdiction are met. This study evaluated and compared the performance of the two plants in Ruiru and Juja Sewerage Treatment Works.

The objectives were achieved by collection, testing and analysis of samples from selecte dponds during two periods. Subsequently, comparisons of the concentrations of parameters inthe final effluent with NEMA standards and the obtained overall removal efficiencies with typical ones were made. In Ruiru plant, the levels of BOD, COD, DO, pH, TSS, TDS, chlorides, TC and FC in the final effluent ranged from 56-65 mg/l, 116-180 mg/l, 1.41-2.50mg/l, 7.04-7.58, 20-120 mg/l, 450-750 mg/l, 140-220 mg/l, 1110+ counts/100ml and 150-240counts/100ml respectively. In Juja plant, they ranged from 18-28 mg/l, 92-100 mg/l, 4.64-7mg/l, 7.35-8.97, 40-160 mg/l, 210-420 mg/l, 109-166 mg/l, 460-1110+ counts/100ml and 39-120 counts/100ml respectively. In Ruiru plant, the pH, chloride and TDS levels met NEMA standards while the BOD, COD, DO, TC and FC levels did not. The compliance of TSS levels varied. In Juja plant, the BOD, chlorides and TDS levels met NEMA standards while theCOD, TC, FC and TSS levels did not. The compliance of pH and DO levels varied. In both plants, nitrates were below detectable levels. In Ruiru plant, the overall removal efficiencies of BOD, COD, TSS and FC ranged from 76.79-80.69%, 64.84-74.11%, 73.33-80% and 47.83-86.49% respectively. In Juja plant they ranged from 67.06-87.59%, 54-55.36%, 20-54.29%and 0-89.19% respectively. Comparatively, there were higher COD and TSS removal efficiencies in Ruiru plant. In both plants, the BOD removal efficiencies were high wherea sthe required 99% FC removal efficiency was not achieved. The study recommends practices such as recirculation of the effluent and control of algal blooms to improve the efficiency in treatment.