

ABSTRACT

Eutrophication is a worldwide environmental problem attributed to direct or indirect discharge of untreated or partially treated effluents from a variety of industries including slaughter-houses. Nutrient-rich water compromises its suitability for various uses and threatens human and environmental health. A study was carried out to assess the impact of effluents from Dagoreti slaughter-houses on the water quality of Kavuthi stream, one of the tributaries of Nairobi River. Samples of effluent effluents from the slaughterhouses and water from Kavuthi stream were collected in 2010 for the determination of both temporal and spatial variation of various eutrophication parameters: total phosphates (TP), soluble reactive phosphates (SRP), ammonium (NH₄), nitrate (NO₃) and nitrite (NO₂). A mean concentration of 5.14± 0.30 mgL⁻¹ for TP, 2.80±0.37mgL⁻¹ for SRP, 18.27± 0.93 mgL⁻¹ for NH₄-N, 8.88±0.25 mgL⁻¹ for NO₃-N and 1.63±0.22 mgL⁻¹ for NO₂- N were recorded for the effluent from the slaughter-house. Significant differences were observed between sampling occasions and sites (p<0.05) along the stream. On average, 1.52±0.08 mgL⁻¹ for TP, 0.68±0.05 mgL⁻¹ for SRP, 5.34± 0.41 mgL⁻¹ for NH₄-N, 4.36±0.20 mgL⁻¹ for NO₃-N and 0.46±0.05 mgL⁻¹ for NO₂-N for the water samples along Kavuthi stream were recorded. Despite the significantly high concentrations of these nutrients in sites downstream of the effluent discharge point as compared to upstream sites, their levels were within the limits stipulated by National Environment Management Authority (NEMA) - Water Quality Regulation for effluent discharge into the environment and source of water for domestic purpose. The study recommends that the slaughter-house operators adopt appropriate effluents treatment interventions and effluent discharge guidelines in order to safeguard human and environmental health