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2024-05-24

Efficacy of waste stabilization ponds and constructed wetlands adopted for treating faecal sludge in Africa: a review

Mwamlima, Petro

Taylor & Francis online

https://doi.org/10.1080/09603123.2024.2358504

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Efficacy of waste stabilization ponds and constructed wetlands adopted for treating faecal sludge in Africa: a review

Petro Mwamlima, Karoli N Njau, Mwemezi J Rwiza

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DOI: https://doi.org/10.1080/09603123.2024.2358504

Abstract

The generation of faecal sludge (FS) in capitals and urban settings of African countries outpaces the available storage, emptying, transportation and treatment technologies. The low technology-based treatment systems for handling FS are preferable and widely adopted in the African context due to their less associated investment and operation costs. The waste stabilization ponds and constructed wetlands were principally developed as wastewater treatment systems however they are widely adopted for treating FS in urban settings of Africa. Less information is known about the efficiency of these systems in lowering FS pollutant concentrations to meet the design specifications and the allowable discharge limits. This paper reviewed the technical efficacy of waste stabilization ponds and the constructed wetlands in treating FS by evaluating the actual treatment efficiency data against the design efficiencies and the maximum allowable discharge limits. The review results revealed that these technologies are user-friendly although they fail to lower the solids concentrations to meet the design and maximum allowable discharge limits. This failure imposes extra costs on operation and maintenance due to the fast filling of solids in the systems hence leading to short-circuiting issues. So, studies on the adequate dewatering technologies of FS before entering the systems are needed.

Keywords

Faecal sludge (FS); Waste stabilization; Pondsconstructed wetlands