Fuel potential of faecal sludge: calorific value results from Uganda, Ghana and Senegal

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Abstract

This research tested the viability of using faecal sludge (FS) as solid fuel – an end use that could unlock an environmentally and financially beneficial replacement for disposal-oriented FS management, while replacing fossil energy. FS samples were collected from pit latrines, septic tanks, drying beds and stabilization ponds in three cities, Kumasi, Dakar and Kampala. For each sample, the average calorific value, solids and water content, and their variation with source and age were determined. The average calorific value of untreated FS across the three cities was 17.3 MJ/kg total solids (TS), which compares well with other biomass fuels. The age of FS did not affect its calorific value, nor did the reduction in chemical oxygen demand (COD) that occurred while it was in drying beds. The TS content of FS depended on its source but ranged from 1 to 6% for sludge from septic tanks and pit latrines, respectively. Harnessing net energy from FS requires partial drying. The results indicate that sufficient drying occurs within two weeks in open-air drying beds, or in a matter of days with simple drying bed innovations.

Key words | *calorific value, drying beds, reuse, sanitation, sludge drying, sub-Saharan Africa*