

Laboratory protocols for testing the efficacy of commercial pit latrine additives

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Abstract

There is considerable national interest in the use of commercial microbially derived products for controlling the rate of accumulation of the contents of pit latrines. Manufacturers claim that some of these products can reduce accumulation rates, prevent the pit from ever filling up, or even result in decreases in pit contents volume. Prior to this research, there have been no scientific publications that have conclusively supported or refuted these claims.

This project undertook to perform reproducible laboratory tests that would quantify the effect of commercial pit latrine additive products. Protocols were developed and tested on a range of different commercial products sold for their ability to control the rate of accumulation of pit latrine contents. The effect of commercial additives on mass loss from VIP sludge in 300 g honey jars was compared to mass loss from similar units subjected to no treatment and treatment with water.

The purpose of these experiments was to separate and quantify the effect of micro-organisms or enzymes originating from commercial pit latrine additives from the effect of natural processes within the pit latrine sludge (including digestion by micro-organisms in the VIP sludge and dehydration) and the effects of other actions associated with treatment, such as the addition of water.

Results indicated that insignificant mass loss occurred in all anaerobic test units, while significant mass loss occurred in all other test units. However, there was no statistically significant difference between any of the different treatments in the aerobic units. Investigation of analytical data from the test units indicated that mass loss in aerobic units was due to a combination of dehydration through evaporation of moisture and biological stabilisation processes, and that the latter were not significantly enhanced by the addition of commercial pit latrine products. It was concluded that there was no evidence to support claims that pit latrine additives could extend the life of a pit latrine.

Keywords: additives, pit latrines, VIP