

ABSTRACT

The provision of sanitation services during the apartheid era in South Africa was minimal or non-existent in the previous “black” areas and for farm workers. Whatever service that was provided was often in a bad state of disrepair. One of the priorities established in the post 1994 elections was to improve the quality of lives for the previously marginalised and neglected communities. This was done through the development and implementation of a policy for reducing the sanitation backlog, and for the provision of a basic level of sanitation. The principles encompassed in the policies developed for poverty alleviation and sustainable development had many points in common with the United Nations Millennium Development Goals and targets declared in 2000.

The provision of Ventilated Improved Pit (VIP) latrines by municipalities satisfies the minimum requirements for basic sanitation. This provision together with the awareness programs are seen to offer communities an improved environment and hence living conditions. Problems arise however, due to the rapid filling, blockages and even the overflow of these pits. The emptying of these pits is also hazardous due to the nature of the waste.

One of the solutions proposed by entrepreneurs was to supply additives that would enhance the degradation processes in the pit thereby increasing the lifespan of these pits as well as offering other benefits; reduced odours, and flies.

The aim of this research work was to test the claim of enhanced degradation by determining the effectiveness of an additive, M, which was deemed to be representative of a group of additive; made up of aerobic microbes and enzymes. The objective was to supply information to the municipality planners and decision makers in municipalities to assist them in their planning for improved management of pits.

Waste was removed from suitable VIPs and used as samples for laboratory scale experiments. Reactor vessels were designed to simulate pit conditions. The additive was tested on the waste as recommended by the supplier and compared in activity against waste tested as references. The reference tests had (i) no addition of additive or water, as well as (ii) varying the volume of water added and (iii) varying the frequency of water addition, no additive added. Measurements were made of the following variables:

- Total mass
- Chemical oxygen demand.
- Total solids
- Volatile solids.
- Ash.

The results of the experimental vessels were analysed and compared with the reference vessels to reveal any differences. The results obtained did not present enough precision and reliability to make any conclusive decision as to whether the additive is effective or not. Recommendations made were to improve the test methodology using the same additive, to obtain results that would make a conclusive decision possible.