

# The Quality and Safety of Human Manure from Kvip for Agricultural Use

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## ABSTRACT

The present study was carried out in the Kpando and North Tongu Districts in which five Kumasi Ventilated Improved Pit (KVIPs) were selected. The aim of investigation is to study the impact of the quality and safety of human manure from the KVIP on the environment especially on agriculture and the health of the people within the Kpando and North Tongu Districts in the Volta Region of Ghana. Microbiological and chemical analyses were conducted to determine microbial and nutrient contents in the human manure. Selection of sampling sites for this research was based on locations where the KVIPs were full and had been closed down for over six (6) months and were waiting to be collected and used as manure in farms.

The mean values of *E. coli* obtained ranged from of 2.7cfu/10g dry wt and a highest value of 3.8cfu/10g dry wt. These values are far below the WHO standard of 1000 faecal coliform/100ml geometric mean for unrestricted irrigation. There was a significant difference between the means of various *E. coli* counts for the various locations. The result also indicated a very weak relationship between average temperature in the respective compost samples and the amount and type of bacteria or helminthes found. There was a strong negative correlation of between *Strongyloides* and duration of closure ( $r = -0.9$ ). *Salmonella* also showed a strong negative relationship of ( $r=-.09$ ) with duration of closure. In this study, ranges for *Ascaris* from all the sampled locations were the same 0.000 – 1.000/10g dry wt. A least mean value of 0.2000/10g dry wt and the highest of 0.4000/10g dry wt were recorded for *Ascaris*. The results obtained met the WHO nematode guideline of  $\leq 1$  egg/litre (WHO, 2006) for waste water and excreta use in agriculture. *Strongyloides* declined with time.

Nitrogen concentrations in the compost had a least value of 0.45% at Mepe where ash is added to the compost, whilst the highest recorded value was 1.01%. Values recorded for phosphorous on the other hand were; least value of 11.5% at Bator and the highest value of 44.4%, at Gameli Preparatory School whilst potassium concentrations obtained were 2.19% at Gameli Preparatory School and the highest value of 11.44% Anfoega Secondary School. Concentrations of the nutrients in the manure were quite low except for calcium and magnesium concentrations at

Anfoega area. This may be due to the geology of the location. The Anfoega area had large deposits of geographic materials.

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