

Detecting Parasites Loads in Urine Diversion Toilets.

by

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Foreword

“... but worms are very unglamorous things, you talk of faeces and you talk of latrines, and there’s no fashionable side to worms. You can always find a politician and policy makers who will love to come to open a brand new cardiac unit. Everybody’s very willing to have a paediatric wing named after them or a special renal unit named after them. Just find someone who wants to have a toilet named after them, then you will control ascariasis” (Kan, 1989 in Crompton *et al.*, 1989^a).

^aCrompton DWT, Nesheim MC and Pawloski ZS (1989). *Ascariasis and its prevention and control*. Taylor and Francis, London.

Abstract

In an attempt to supply sanitation to the growing communities in rural and peri-urban areas around Durban, the eThekweni Municipality has installed urine diversion (UD) toilets which have been modified to suit local conditions. These toilets are based on the ecological sanitation (EcoSan) system. The future aims are to reuse waste as a composting medium and minimize the use of water but the presence of microorganisms in the faecal waste poses a potential health risk to people in contact with it. Currently the Municipality has not deemed the waste safe for re-use but has suggested that after a one year standing period it should be free of all potential pathogens including *Ascaris lumbricooides* (human roundworm) ova. This study reports on the development of the AMBIC protocol for the recovery of *Ascaris* ova from the standing vaults of UD toilets. The protocol has been shown to consistently recover over 70% of *Ascaris* ova and has the added advantage of recovering the ova of other helminth species (*Trichuris trichiura* and *Taenia* sp.) present in a UD standing vault sample. Recoveries of *Ascaris* ova and ova of other parasite species, namely *Trichuris* and *Taenia* sp., are reported from waste which has been standing for one year. This is cause for concern as it shows one year is not a sufficient standing period to render the waste free of all microorganisms. Sampling from 124 UD toilet vaults that were in use, showed a high prevalence of both helminth (*Ascaris lumbricooides*, *Trichuris trichiura* and *Taenia* sp.) and protozoan (*Giardia* and *Cryptosporidium*) parasites.

Preface

The experimental work described in this thesis was carried out in the School of Biological and Conservation Sciences, University of KwaZulu-Natal from January 2006 to January 2008, under the supervision of Professor M.T. Smith and Dr N. Rodda.

These studies represent original work by the author and have not otherwise been submitted in any form for any degree or diploma to any tertiary institution. Where use has been made of the work of others it is duly acknowledged in the text.

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