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HUMAN WASTE MANAGEMENT IN
LOW-INCOME SETTLEMENTS IN LAE, PAPUA NEW GUINEA

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INTRODUCTION

Just below the Equator, to the Southeast of Indonesia, is the Island of New Guinea, which except for Greenland is the largest island in the world. It is divided politically into two sections : the Indonesian-administered West New Guinea, and the eastern section, which makes up most of the independent state of Papua New Guinea. This paper will discuss the methods and problems of human waste management in low-income settlements in Papua New Guinea in general with illustrations; and in particular details drawn from those methods and problems existing in Lae, the second largest urban centre and a foremost industrial town in Papua New Guinea.

Lae, with its population of 60,000, is situated on the Huon Gulf at 7° Latitude. The city of Lae is presently experiencing a population growth rate of more than 5% per annum. This is mostly due to the migration of people from the highlands where the population density is too high to sustain a reasonable living standard with existing agronomic methods (1). Thus to seek employment which often proves to be elusive, the highlanders come, via the highlands highway (the longest all-weather highway in the country and to which they have easy access) to the city of Lae. These new arrivals face the same problems that any displaced group faces anywhere in the world. They settle down in self-help settlement areas on the outskirts of the city, build their makeshift houses, and try to solve their problems of existence and survival. At present there are 13 settlements in Lae.

A BIT OF HISTORY

Before the first missionaries came to Papua New Guinea in the beginning of the 19th century, the local people did not use systematic methods of human waste disposal. Coastal people were using overhung toilets, whereas the people of the mainland used bushes and shrubs.

The earliest method of human waste disposal introduced after the missionaries came was the pit latrine. But, as is the case anywhere - when a new though better and more hygienic method, but drastically different from the one that has been handed down from generation to generation is

702

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introduced by outsiders - the use of the pit latrine was not readily accepted. As the early Papua New Guineans lived in villages, the pits were mostly communal. And because the people regard waste disposal as a secret, they were hesitant to walk in front of their village elders to go to the toilets. Also, a common belief was that anyone in the family of the person digging a toilet would die soon. Here again the mores and traditions of a culture were interfering with the health and sanitation of the people. It was not until the end of the second World War that the pit latrine acquired a semblance of acceptability. By that time, more and more people had been to schools, became more receptive to the new methods of sanitation and came to realize the importance of maintaining hygienic conditions.

IN LOW-INCOME SETTLEMENTS

In a comparative nutritional study in 1980 (2) in Lae, it was discovered that a high percentage of families in two of the thirteen settlements were using reasonably sanitary methods of waste disposal. The number and percent of families using septic tanks, pit latrines and none of these two systems of disposal are given in Table 1.

Table 1 : Human Waste Disposal Methods
Used in Buimo Roads and Taraka Settlements, Lae in 1980.

Method	Buimo Road		Taraka	
	Number	%	Number	%
Septic tank	4	4	36	17
Pit latrine	99	95	172	81
None	1	1	4	2
Total	104	100	212	100

However, the popularity of the pit latrine in both settlements was deplored by the researchers (3). In the report of the nutritional study, the researcher wrote:

"Pit methods are the usual form of sanitation. This method is not successful, as the ground water table is high and part of the settlement is often flooded during the rain".

It was hypothesized further that the failure of these pit latrines could have affected the health of the settlement dwellers. For example, the

research found a high incidence of intestinal parasites and diarrhoea in the pre-school children in both settlement.

In Taraka, out of 213 stool samples, 54% had larvae or eggs of intestinal parasites present. In 12% the counts were moderately high and in 12% the counts were very high. Out of 352 school children, 76% did not have diarrhoea at the time they were examined, 5% had diarrhoea during that week, 11% had diarrhoea in the previous week and 8% had diarrhoea for both weeks (2).

The results (3) for the pre-school children in the Buimo Road settlement are as follows.

"Larvae or eggs of intestinal parasites were found to be present in 52% of the 96 stool samples taken during the course of the survey. These included 36% which were infested with hookworm and 16% with both hookworm and ascaris. In 19% of the samples the counts were high (greater than 5000), 11% were medium (2000-5000) and 16% low (under 2000)".

"15% of the children surveyed had diarrhoea near the time of the survey. Of these, 4% had diarrhoea the week before the survey and 6% during the survey week. These two groups (10% of the sample) are likely to be the children suffering from acute diarrhoea. A further 5% had diarrhoea during both weeks. These can be considered chronic cases".

CONCLUSIONS

Clearly, the high rainfall of Lae (annual rainfall is 4800 mm) and the poor underground drainage - which results in quick flooding in the settlements - render the pit latrine unsuitable as far as hygiene and sanitation is concerned. But, the settlement dwellers cannot afford more sanitary methods. To be able to develop a more sanitary and more hygienic method, yet financially within the means of the people (if possible with help from the local government), would be an ideal solution to this situation.

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