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LOW-COST SANITATION IN NIGERIA

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INTRODUCTION

" Get mobilized, pay attention to hygiene, reduce disease, improve the health conditions"

Mao Tse-tung.

This quotation from the great Chinese leader is very appropriate for all other developing countries today as it was for China during the period before Chinese revolution of 1949. In order that any environmental sanitation programme may have noticeable impact on the health of the people in the developing countries it is necessary that the people must be involved through aided self-help approach (Oluwande, 1969 ref.1, 1975 ref.2, 1976 ref.3, Oluwande and Onibokun, 1976 ref. 4). As rightly pointed out by Chambers ref.5 (1974), Feachem at al ref.6 (1978), Holmquist ref.7 (1970), Lamb ref.8 (1974) and Schaffer ref.9 (1969), to advocate mere self-help for people without adequate mobilization and necessary imput assistance will make programmes get out of hand and eventually lead to frustration for all parties concerned. Feachem al ref.10 (1980) also outlined some of the factors which lead to failure of self-help schemes and how to overcome the difficulties.

In Nigeria, the only lowcost sanitation method commonly employed by the people is the conventional pit latrine as illustrated in fig 1. However, the simple latrine is not popular among the people partly because of the well known shortcomings of the method and partly because of defective siting, construction and maintenance practices (Oluwande, 1969, ref.11, Oluwande 1979 ref.13) The commonest sanitation method in the urban areas are the ubiquitous septic tanks and the soakaway pits as illustrated in fig II. All"modern" houses, even those in communities where there is no pipe borne water system and those houses occupied by those who cannot operate the system properly are provided with septic tank systems. For most of the systems the tanks receive only sewage from the water closets, while sullage from the kitchens, bathrooms and wash-hand-basins is discharged either into the soak-aways or into the open gutters (Oluwande et al 1978 ref.12, Feachem et al 1980, ref.14). The bucket latrines of the type illustrated in fig III are also common in urban and rural areas.

In recent years, much attention has been drawn to the need for lowcost sanitation devices for the developing countries which are effective and sanitary without being dependent much on water. The developments were aimed at reducing the bad features of the conventional pit latrines. Among the modified forms of latrines being introduced in different parts of the developing countries are:

(a) the ventilated latrine,
(b) the RDEC
(c) the water seal and the composting latrines (Wright, 1977, ref.15 Winblad et al, 1978, ref.16). In the pilot project being reported in this paper these various modified forms of latrines and the conventional type were investigated.

2. Material & Method

Prior to the construction of the latrines, preliminary surveys were carried out in each of the study areas to find out the types of latrine best suited for various households selected. The study areas include parts of Ibadan city (Population 2 million); Ilesha (Population 4000,000), Oyo (Population 300000), Osu (Population 20,000), Sekona (Population 10,000) Ijaye (Population 5,000) and Ibarapa Division (Population 150,000). The various types of latrines provided and investigated are illustrated in fig.IV. The distributions of the sanitary appliances are given in table I.

In Ibarapa division, the landlords provided the pits and the parts of the material costs. The remaining costs for materials, carpenters and bricklayers were provided by the University. In order areas, the entire costs were provided by the Nigerian Institute of Social and Economic Research (NISER). The average costs for each type are given in table II.

TABLE I

Distributions of the latrine types

Types of latrines

Location	ROEC	Ventilated pit	Water seal direct pit	Water seal offset pit	Aqua privy	Conventional pit
Ibadan	-	1	-	1	-	3
Ilesha	1	1	-	1	1	1
Oyo	1	1	1	-	-	1
Osu	1	1	-	-	1	-
Sekona	-	-	1	-	1	-
Ijaye	1	1	-	1	-	-
Ibarapa Division	-	-	-	1	4	6

TABLE II

Cost of different types of latrine in Nigeria (1980)

Costs per one unit in Naira

Latrine type	Pit	Floor slab		Piping	Superstructure		Total
		Material	Labour		Material	Labour	
Conventional latrine	50	50	40	-	123	70	333
Ventilated pit latrine	50	50	50	30	125	70	375
Water seal direct pit	50	70	50	-	123	70	363
Water seal offset pit	60	100	80	45	123	70	478
ROEC latrine	60	100	80	35	125	70	470
Aqua Privy	80	150	120	60	123	70	603
Septic Tank	120	180	150	150	?	?	600

Note: (a) 1 Naira = 0.76 Pound Sterling (Oct. 1982)
? (b) Normally the septic tank is not built under a separate superstructure.

Questionnaires were prepared for research assistants to complete when they made monthly visits to each of the units. The typical questionnaire is given:

Low Cost Sanitation Pilot Project Monitoring Programme Questionnaire

1. Type of Project .....
   (a) Aqua privy
   (b) Conventional pit latrine
   (c) Ventilated pit Latrine
   (d) ROEC latrine
   (e) Offset water seal latrine
2. Location.....
3. Name of Landlord.....
4. Date visited.....
5. Time visited.....
6. Number of users.....
7. Numbers of adult users .....
8. Number of children users..... (those under 10 years)
9. State of the floor of toilet:
   (a) clean
   (b) dirty
   (c) dry
   (d) wet
10. Intensity of smell:
   (a) None
   (b) Slight
   (c) Strong
11. Intensity of Fly breeding:
   (a) None
   (b) Slight
   (c) Heavy
12. Position of the cover for the latrine
   (a) Properly kept in position
   (b) Not in position
   (c) Not available
13. State of maintenance of the inside of the inlet pipes:
   (a) Clean
   (b) Dirty with excreta sticking
14. Any other operation-maintenance problem observed:
   Specify: (a) (b) (c)
15. Any other operation-maintenance problem indentified by the users:
   Specify: (a) (b) (c)

Discussions

From this pilot project, the following observations were made for the parts of Nigeria concerned:

(i) Generally, people are found to be eager to help themselves to provide sanitary facilities once they receive some form of encouragement from the authorities. Such encouragement may be in different forms, like provision of technical supervision during construction, assistance in procuring imported materials or provision of skilled labour by carpenters and bricklayers. This type of aided self-help approach goes a long way. It is not enough for authorities to ask the people to participate in self-help projects. The people must be aided to help themselves.

(ii) The reactions of the people to new sanitary facilities depend on many factors like the level of formal education, the socio-economic status and the previous experiences with similar facilities in the past. From this study, it was observed that many were eager and willing to accept the use and maintain the new types of sanitary facilities even though they regarded the facilities as special gifts from the government. They regard themselves as being very lucky and that they must use and take proper care so as to please the government. Some refused to use the facilities because they are not familiar with them. Even after they had been educated on the use and maintenance they still refused to use them. There is a particular chief who will not permit his tenants to use the aqua privy built for them because he wants them to use only the pit latrine. Another will not allow his household to use the offset water-seal latrine because he fears it cannot be properly used by them no matter the amount of education on the use and the maintenance. However, this type of oppositions to the new types of sanitary facilities were deliberately invited because the facilities were provided to find out to what extent can people who are used to one type can be educated to use new and different types. This study reveals that it is easier to educate the simple and illiterate families with low socio-economic status than the educated or half educated ones, who feel they know what is good for their people.

(iii) Initially, it was observed that in those houses where there are many children, the concrete floors of the latrines were being fouled without maintenance. In most of such houses the women responded to the advise of the research assistants on the

need for proper maintenance. Once the women were talked to and they realised that the research assistants can call any time without notice, the standard of maintenance improved.

(iv) For the components of the latrines to be properly constructed, the local bricklayers require close supervision. If this is not done, special components like the vent pipe, the seal for the pour flush and the slanting inlet for the ROEC are likely to be misplaced. Among the common mistakes observed are: placing the vent pipes inside the latrine when they should be outside for optimum effects (Morgan 1979 ref.17) and making the slanting angle of the inlet pipe in the ROEC too big or the length of the pipe too long. It is therefore concluded that in the parts of Nigeria involved in this project, the local bricklayers and carpenters who are able to build septic tanks systems correctly and atimes without supervision cannot construct the modifications desired for the conventional latrines without close supervision. This situation is likely to be the same for other parts of the developing countries.

(v) The costs of the latrines are dependent on many factors like the method of executing the project (whether by direct labour or by contract); the location of the site (materials & transportation) and the number of latrine units (economy of scale). The costs given in table II are for "semi—contract" approach. This was due to the fact that the bricklayers and the carpenters were invited to a meeting where the prices quoted by them were haggled and reduced. The modifications make the latrines more expensive than the conventional ones. Also, it is not easy to obtain the ideal size (15cm diameter) of the vent pipe (Morgan 1979 ref.17). Therefore, 10cm asbestos cement or PVC pipes commonly employed for the septic tank systems were used. Also, the 15cm diameter pipes which are ideal for the inlets of the ROEC, the waterseal type and the aqua privy are very difficult to obtain.

(vi) It is very difficult, especially in the urban centres, to know the number of people using each sanitation unit. This is because the people are unnecessarily suspicious that a form of sanction which depends on the number of users will later be imposed on them.

Conclusions

The low cost sanitation appliances most appropriate for Nigeria are the various type of the pit latrines. The ventilated pit and the ROEC types are best for households where paper and other solid materials are used for anal cleaning while the water seal types are suitable for moslem households where water is used mainly by adults. In many houses, where the use of the latrine unit is restricted to one family, the conventional pit latrine is effective. This is because, it is easy to use and maintain such latrines properly.

The modifications to the conventional latrines, though desirable, make the construction difficult for the local bricklayers and carpenters. Also, the materials required for the modifications are not available locally. The people will have to be aided to obtain them.

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