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Why sanitation is not a popular subject

Dick de Jong

IRC International Water and Sanitation Centre

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LIBRARY, INTERNATIONAL REFERENCE
CENTRE FOR COMMUNITY WATER SUPPLY
AND SANITATION (IRC)
P.O. Box 93190 2509 AD The Hague
Tel. (070) 814911 ext. 141/142

12610
LO: 300 95W0

Introduction

From a literature review on sanitation in three databases (IRCDOC, Geobase, TROPAG/RURAL KTT) it becomes clear why sanitation is not a popular subject.

Not for **villagers** (relieving oneself is a personal affair + cultural, social sensitiveness - compare for example Shit video with the Sanitation video Namibia and see example of social cultural taboo of sharing a latrine in Henan province three generations with grand father and daughter in law + Luo in Kenya, Almedom and Chatterjee 1995 p 8),

Not for **engineers** (subject with hygiene behaviour too complicated, water solution much more glamorous and rewarding than sanitation solutions, no career possibilities - see clipping from NETWAS newsletter + complaints Uno Winblad about lack of scientific attitudes and journals).

Not for **politicians** (water systems bring in publicity and votes sanitation not - only when cholera or plague epidemics break out, Peru 1991, India 1994, and cause damage to the image or economy, politicians take quick action on hygiene) - see De Swaan 1989 pp 130 - 149.

Historical lessons from the industrialized world

De Swaan, Abraham (1989) describes in "In care of the state, Health care, education and welfare in Europe and the USA in the Modern Era" the historical development around public water supply and sewerage systems in the industrialized world.

Current citizens prefer to see their faeces disappear behind them, as quickly, completely an unobtrusive as possible. And a certain attachment to one's faeces is considered to be a sign of childish anal fixation, De Swaan p 142. But less than 150 years ago it was common behaviour to store faeces, use it as fertilizer or sell it to passing farmers. Yes, in the West, excreta disposal meant money, and this explains, with the costs of the sanitation reform, the resistance to the connection to the sewerage system, which deprived the people of their own production and let them pay for it as well.

Only when excreta in the West had lost these evident social functions, Freud came to analyze a continuing attention for excreta as an individual psychological "fixation". Gleichman 1979 quoted by De Swaan points out that this sanitary reform in cities contributes to a "reform in the language": "With the increasing distance between waste and human excreta, and with the increasing chains of interaction between people and their waste, people get less opportunity to talk about these issues".

Almedom and Chatterjee (1995) report that sanitation-related behaviour is also difficult to investigate. It is time consuming and "the topic does not lend itself to casual conversation or direct questioning. Careful planning and the adoption of unobtrusive and sensitive investigative techniques are called for.

Barriers to progress: why sanitation does not happen

The barriers identified by the Working Group on Promotion of Sanitation also hold lessons why sanitation does not get sufficient attention. The barriers are varied and complex, but the working group identified the following nine linked and overlapping categories:

Lack of political will

Low prestige and recognition

Poor policy at all levels

Poor institutional framework

Inadequate and poorly used resources

Inappropriate approaches

Neglect of consumer preferences

Ineffective promotion and low public awareness

Women and children last

There are also more general demand and taboo factors which in most cultures are barriers to progress:

- Little effective demand
- Cultural taboos and beliefs.

References:

Almedom and Chatterjee (1995). Indicators for sanitation - yardsticks for cleanliness? in: Waterlines Vol 13 No 3 January 1995, pp 6-9

De Swaan, Abraham (1989) In care of the state, Health care, education and welfare in Europe and the USA in the Modern Era, Dutch translation, Uitgeverij Bert Bakker, Amsterdam

WHO (1994) The Problem of Sanitation, March 1994, Water Supply and Sanitation Collaborative Council Working Group on Promotion of Sanitation, WHO, Geneva

Search done in IRC Doc on "Sanitation"

31 March 1995

In the context of the Awareness/advocacy project the author analyzed the periodical holdings in IRCDOC on "sanitation". Under classification 3@ we have 1347 postings, on journals and newsletter we have 1772. The two searches combined result in 209 articles, of which 105 are from 1990 to 1994. The articles in IRCDOC were from 97 periodicals.

Two specialized magazines (on water and sanitation) scored highest on articles published.

Waterlines (independent articles, quarterly, 2500 circulation) published 23 articles.

The now defunct Source (UNDP supported programmes information, quarterly) published 12 articles.

Other periodicals that published some articles on sanitation are:

GATE 9 (GTZ, appropriate technology, quarterly, circulation, DM 24 p year)

Bulletin of WHO 9 (WHO, health and epidemiology, bimonthly, US\$ 141)

Asian Environment 8 (Manilla, international pollution control, quarterly, circulation, US\$ 12 ind, US\$ 24 org)

Water Science and Technology 8

Indian Journal of Environmental Health 7 (NEERI, Indian engineering, quarterly)

World Health Forum 6 (WHO, health, quarterly, circulation, US\$60)

Water and Waste-Water International 6 (USA, no outside articles)

H2O 5 in Dutch only

The Geobase search

A search in Geobase on latrines and toilets from 1990 resulted in 52 postings of which only 24 were relevant. Her the epidemiology side of WES among the scientific journals was scoring highest with 12 articles:

Int. Journal of Epidemiology 5

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East Afr. Medical Journal	2
Environment and Behaviour	1
Journ. of Environmental health	1
Journ of Tropical Medicine	1
Parasitology	1

World Health Forum	1
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The water science field published 5 articles on sanitation

Science, Technology and Development	2
Water Science and Technology	2
Water resources Research	1

Other articles were published in:

Environment and Urbanization	1
Environmental Geology	1
Review of Urban and Reg. Dev. Studies	1
Waterlines	2

Only 4 articles between the two databases overlap (2 Waterlines, 1 World health Forum, 1 Int. Journal of Epidemiology).

Selected items on Sanitation from Highlights 3,4,5 1994

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HIGH INVESTMENT VERSUS LOW-TECH

One of the continuing debates in the sector is that of high investment versus low-technology projects for solving sanitation problems. Here we **summarize the arguments** in this debate based on the experiences of two projects in **Brazil**. The **high investment project** concerns the long-discussed operation to clean up Guanabara Bay in Rio de Janeiro. The project has been given the go ahead by the Inter-American Development Bank (IDB), which is to contribute US\$ 350 million to the estimated US\$ 793 million cost of the project. An additional US\$ 286 million will come from Japan's Overseas Economic Cooperation Fund (OECF), and the balance from the Brazilian government.

Major Consequences

The major consequences of the bay's environmental degradation have been:

- reduced commercial fishing (down 90 per cent);
- destruction of mangrove swamps;
- water unsuitable for bathing;
- catastrophic, costly floods;
- outbreaks of waterborne diseases like schistosomiasis, leptospirosis, infectious hepatitis, typhoid/paratyphoid fever, and gastroenteritis; and
- garbage-blocked water courses and dry river beds used for housing.

Institutional Aspects

Water supply and sewage are centralised in the state-owned CEDAE water and sewage company. According to a recent World Bank study on sustainable urban development in Rio de Janeiro, CEDAE's current technology - imported some 100 years ago - is completely obsolete. Network controls are slack, much water and energy is wasted, there is little adaptation for irregular residential settlements, and the interaction with Funacao Estadual de Engenharia do Meio Ambient (FEEMA), the state's environmental protection agency tends to be hit-or-miss.

Water Sources and Sewage

The Guandu River supplies some 80 per cent of good quality water for Rio de Janeiro and the Baixada Fluminense lowlands. Sewage networks cover 30 per cent of the Rio de Janeiro area, serving 70 per cent of the population, with the Atlantic ocean, and the Guanabara and Sepetiba Bays being the final destination of the sewage. The rivers running through the Baixada Fluminense suffer from a lack of infrastructure, and often become open sewers.

Garbage Collection

In Rio de Janeiro, garbage is collected by the COMLURB urban cleaning company. Disposal is largely in low-cost sanitary landfills. Although the Rio de Janeiro garbage collection service is generally good, ballooning populations demand better disposal facilities, preceded by selective collection and recycling. Recycling and composting plants currently being launched or built offer valid alternatives for close-to-saturation current dumps.

Clean-up Project

The clean-up project aims to improve the quality of life for some **7.3 million inhabitants** of the basin. **Three million** people will be **directly benefitted** by sanitation project and clean water supplies. A 1,300-km sewage pipeline network will be installed, increasing from 2.8 million to 4.2 million the number of people who will treat their sewage instead of discharging it directly into rivers. The project includes building sewage treatment plants in Alegria, Pavuna, Sarapui, Sao Goncalo and Paqueta Island. Icarai and Governador Island will have their treatment plant capacity increased. Through sewage treatment plants, garbage collection, and recycling facilities around the bay, the state government will treat approximately 7.3 cubic metres per second of untreated sewage that is currently discharged into the bay.

Tenders

The state government will invite national and international tenders to build the five new sewage treatment stations, install the 1,300-km pipeline collector, 86 km of water mains and a 276-km network for distributing clean drinking water, plus the installation of 525,000 hydrometers. Around 1,700 families that presently live in bayside slums will be relocated to new housing projects. To reduce the effects of rainy season floods upon 73,000 people who live near the bay, a massive dredging project is planned. In addition, recycling and compost units will be built to collect and treat 700 tonnes per day of solid waste.

High Water Consumption

One expert estimates that water consumption in Brazil is quite high because up to 30 per cent of the water supply is lost due to leakage, illegal use and inefficient metering. In Rio de Janeiro, of the 3,450,000 m³/day of drinkable water, 50 per cent is lost or consumed through illegal connections. Given this background of wastage and inefficiency, experts are interested in an alternative approach.

Ilha Grande Bay

The Ilha Grande Bay clean-up scheme provides an example of a **more people-centred approach**. Ilha Grande Bay, almost three times larger than Guanabara Bay, was granted a loan of **just US\$ 5 million** from the World Bank, a sum matched by the municipal authorities. The **mayor of the city** of Angra dos Reis (a city with a population of 100,000) states that the solution to basic sanitation cannot be reduced too the implementation of technical projects. In a city where only 15 per cent of the population is served by a sewage network, **community participation is fundamental**. Through community participation, **people become aware** of the relationship between basic sanitation and collective health, and they assume responsibility for the operational efficiency of the system implanted as a collective task.

Public Education Campaign

Before the approval of the World Bank loan, Angra dos Reis City Hall undertook a **massive environmental public education campaign** which included sending district representatives to identify community leaders and discuss sanitary and other social questions with them. As a result of this work, several People's Councils for monitoring budgets, the environment, urban development and health were created. The councils are composed of representatives from the private sector, grassroots community leaders and City Hall officials who participate permanently in the planning of the city's future development, including basic sanitation.

Low-Cost Solution

After analysing different types of sewerage system, the **council chose the condo-main as a low-cost solution**. A pilot project funded by City Hall chose 1,300 houses in seven communities and concluded that with community participation, **costs could be reduced from US\$ 250 to US\$ 49 per person**. In order to enable each community to participate effectively in the administration and social control of the new municipal system, City Hall representatives held numerous meetings to disseminate information, thereby enabling the population to choose alternative routes for the sanitation project.

Condo-Main Systems

In condo-main systems, a collector tube passes through the properties, requiring less pipeline length to be laid at shallower depths. A number of houses will be interlinked by the collector pipe and the sewage will go to small and medium-sized treatment stations, also cutting costs. With the installation of a 307-km sewage network and a 56-km pipeline network, in addition to 20 new wastewater treatment stations, the 16 million litres of raw sewage flowing daily into Ilha Grande Bay is expected to be cut by half.

Cost Comparison

Costs per capita in Angra dos Reis are three times lower than in Guanabara Bay. Including

water, sewage and drainage services, the Angra dos Reis model will cost US\$ 142 per person. This figure is arrived at by dividing US\$ 10 million by the 700,000 people to be benefitted. In Guanabara Bay, per capita costs jump to around US\$ 600 for the same services. (NB)

(Water and wastewater international, vol. 9, no. 3, June 1994, p. 10-11; Water and Environment, vol. 3, no. 29, p. 10-12)

SIMPLER/CHEAPER VIP LATRINES

Recently, Zimbabwe's Mvuramanzi Trust has been experimenting with very low-cost adaptations of the VIP latrine. The simplest have lightweight shelters made of reeds or grass, or poles and mud. If the shelter is lightweight and the ground firm, a fully lined brick pit may not be required. A partial lining with bricks built up on a ledge cut in from the pit wall, half a metre from the top may be sufficient. Alternatively, a "ring beam" of large stones around the top of the pit reinforced with cement may be adequate.

Vent Pipe

A concrete slab with a squatting hole and a vent hole is needed to cover the pit. Altogether, only one bag of cement is used. A low-cost vent pipe can be made with local materials. The simplest are made of reeds wired together to form a tube. This then needs to be covered to make it airtight and water-resistant. Cement mortar can be used for this or alternatively plastic from discarded bags can be neatly wrapped around the reed tube and bound with twine. A further layer of grass over the plastic protects it from disintegrating in the sun.

More Durable Alternatives

Where bricks are available, they can ensure that the latrine lasts for a long time. In very low-cost versions, bricks used for the shelter do not need to be fired. Instead they can be dried in the sun. Ideally fired bricks should be used for the vent pipe. However, the cement tube described earlier is used to a sun-dried brick structure fitted with a grass roof.

Pit Lining

Whether bricks used in the structure are fired or not, for safety reasons the pit must be lined with fired bricks and cement mortar. Even so, it is still possible to build a durable VIP with fired brick lining using only two bags of cement.

Manuals

While low cost VIPS require more maintenance than standard, more expensive models, and do not withstand extremes of weather so well, they rely on traditional materials and skills rather than on imported materials and are therefore more easily built by rural communities. The Mvuramanzi Trust has produced a series of manuals on how to build low-cost VIP latrines. (NB)

Peter Morgan, Mvuramanzi Trust, Box A547, Avondale, Harare, ZIMBABWE, tel/fax:
+263-4-335172

(Dialogue on diarrhoea, no. 57, June-August 1994, p. 4)

SANITATION IN EMERGENCIES

The key issues for sanitation in emergencies are restricting excreta disposal to certain areas and finding sanitation solutions that are acceptable to the people involved. It is also important to be sensitive to the fact that people living near an emergency settlement may not have adequate sanitation.

Controlling Open Defecation

As a first step, open defecation should be restricted to agreed areas outside the emergency settlement, away from where local people live, and at least 50 metres from drinking water sources. Separate areas should be set aside for men and women. Facilities for handwashing need to be provided nearby. Drainage channels may need to be dug out to stop excreta from being washed towards water sources.

Open Defecation or Trenches

Excreta deposited in the open must be covered with soil to prevent smells and flies. If open fields are used for defecation, excreta should be collected and disposed of in pits and covered over. Alternatively, trenches can be dug for people to defecate in. Trenches need to be kept clean and covered over with soil each day. Both systems - open defecation or trenches - require a large workforce who may require payment. Workers should be provided with equipment such as rakes, shovels and buckets, and protective clothing such as overalls, gloves and boots. They will also need facilities for changing out of soiled clothes and washing them. Controlled open defecation often goes against previous social habits. To work well, it requires the full cooperation of the community and monitoring to make sure that the system is working.

Latrines

As soon as possible after the emergency settlement has been established, latrines should be constructed, either on the basis of one latrine per family or one latrine for a group of families. Latrines should be at least 20 metres away from sources of drinking water, and pit latrines should not be sited uphill from wells or boreholes. Water supplies in emergency settlements need to be monitored regularly for faecal pollution.

Equipment and Materials

Organisations working in emergency situations should keep supplies of picks, shovels and spades which can be used immediately to dig latrines until local equipment can be brought. If materials for making squatting slabs and pit lining are available locally these should be used otherwise local initiative may be undermined.

Portable Communal Latrines

Oxfam has developed portable communal latrines for use in flooded areas. The latrine was developed together with the **University of Surrey** and the **Cholera Research Laboratories in Bangladesh**. Based on the principle of a septic tank, sludge from excreta

is kept for 8-10 days in a sealed rubber tank during which time microbes reduce pathogens such as *Vibrio cholerae* to a harmless level. The sludge is then emptied. Each of these latrines can serve the sanitation needs of 1,000 people on a long-term basis. However, they may require at least 3,000 litres of water a day for flushing effluent between two tanks.

Community Participation

Technical solutions to emergency sanitation must be accompanied by community participation in decision making and sanitation education to bring about behaviour change. People need to have the opportunity to question and advise and to maintain and manage new systems. (NB)

Joy Morgan, Public Health Team, Emergencies Department, Oxfam, 274 Banbury Road, Oxford, OX2 7DZ, UNITED KINGDOM, tel: +44-865-311311, fax: +44-865-312600

(Dialogue on diarrhoea, no. 57, June-August 1994, p. 5)

RURAL WS&S PROJECT KARNATAKA CRITICISED

According to a **local Indian newspaper**, the Danida rural water supply and sanitation scheme, which is being implemented as a pilot project in Rajasthan, Orissa, Kerala and Tamil Nadu and Karnataka, is having **little impact** on the people because of the **gulf between planning and implementation**.

The project aims to supply an average of 40 litres of water per person and provide toilet and sewerage facilities in rural areas, the ultimate aim being improvement of health and sanitary conditions in villages. One of the main reasons for the failure of the rural sanitation schemes is that there is no attempt to train people on the use of the facilities provided.

Sanitation Component

The project in Karnataka planned to provide 2,000 lavatories in 45 schools, 965 washing stones near tube wells and tanks, 965 cattle troughs, 9,650 metres of drains in villages, and 81,600 metres of sullage drains to avoid stagnation of the water flowing from kitchens and bathrooms. But all these sanitation schemes have proved to be ineffective, though Rs 49.12 lakh has been spent out of a total of 81.63 lakh meant to sullage drains. Moreover, these drains have been so ill-planned that wastes flowing from one house settle before some other house.

Though the project planned to provide lavatories in 2,000 houses, so far, only 130 houses have got lavatories. According to the **officials**, it is the **lack of interest by the public** that is at the root of the problem. One official commented that **political interference and pilferage** by the contractor-official nexus, is the main reason behind the failure of the sanitation scheme. (NB)

(Deccan herald, July 16, 1994)

DRY-BOX LATRINE - AN URBAN ALTERNATIVE?

Most common sanitation technologies are difficult to transfer to the conditions prevailing in fast growing populations living in informal or illegal settlements in developing country cities. Pit-based systems like the VIP latrine and the pour-flush latrine require a reasonable amount of space, soil that can be dug, and a low groundwater level. Sewage systems are prohibitively expensive both to install and to operate. They require large amounts of water for flushing, pollute water sources and can only be effectively applied where there is planned urban development.

Human Excreta as a Resource

For urban areas in particular, alternatives are required based on the concept of human excreta as a resource. The dry-box latrine is such an alternative. Under favourable circumstances human faeces will gradually decompose and turn into a rich organic soil. In the process the volume is reduced and pathogenic organisms destroyed. In a pit or a vault decomposition is hampered because urine and faeces are mixed together. The mixture turns watery, liquid accumulates, the pit or vault rapidly fills up, lack of oxygen slows down decomposition and results in foul smells, and there is likely to be intensive fly breeding.

LASF

The dry-box system avoids these problems by separating urine and faeces and by not adding any water to the pit or vault. The Letrina Abonera Seca Familiar (LASF) developed by CEMAT in Guatemala is an example of latrine based on the dry-box concept. The LASF is normally built above ground. Its receptacle consists of two vaults, each with a volume of 0.6 m³. There is a movable seat with a urine collector on top of the receptacle, or alternatively there is a fixed seat above each vault. From the collector the urine flows via a pipe into a soakpit. Compost is removed via ground level openings, normally covered by hatches.

Use

After using the latrine the user sprinkles ashes, soil or a soil/lime mixture over the faeces. The vault thus only receives faeces, ashes or soil/lime plus paper or leaves used for anal cleansing. (Compostable kitchen and garden refuse is not put in the vault as it contains too much water). Every week the contents of the vault should be stirred with a stick and more ashes added. Urine is infiltrated into a soakpit under the latrine or collected in a jar, diluted with 4-5 parts of water and used as a fertiliser. When the first vault is nearly full it should be topped up with soil and the opening in the platform closed. The second vault should now be used. A year later, or when the second vault is nearly full, open and empty the first vault. It will by now contain about 250 kg of relatively safe compost.

Lessons Learnt

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The following lessons can be drawn from the LASF experience in Central America:

- there are no technological barriers to the widespread use of the dry-box system for human excreta disposal;
- the system can be used in crowded urban areas as well as on farms and in small rural communities;
- the main barrier is the common attitude that the dry-box represents an inferior technology fit only for the poor;
- a dry-box latrine is more sensitive to misuse and neglect than a pit latrine. It is therefore particularly important that dry-box users participate in decision making and training and receive follow-up support; and
- as the contents of the vault must be kept dry, the system is less feasible where people use water for anal cleansing.

Editorial Note

The article contained the following editorial note: "All sanitation technologies have strengths and weaknesses. One possible weakness of the dry-box latrine, identified in practice, is that users need to be motivated to ensure that urine and faeces are separated. The standard design may be more difficult for women and small children to use than it is for adult men. Therefore to work well, the dry-box latrine requires substantial promotion, training and follow-up." (NB)

Uno Winblad, Pataholm 5503, 384 92 Alem, SWEDEN, tel: +46-499-24255, fax: +46-499-24253

(Dialogue on diarrhoea, no. 57, June-August 1994, p. 6-7)