

Smell: an overlooked factor in sanitation promotion

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Bad smell from human waste carries so many social, moral, aesthetic, and disease-related concerns that it represents a major barrier to successful sanitation adaptation for people all over the world. This paper summarizes the author's experiences from sanitation research in low- and middle-income settings from several continents and research disciplines, and addresses the often-overlooked issue of reduction of smell for effective sanitation promotion. The paper argues that people therefore have developed strategies to avoid smell, some of these being of concern to public health specialists. It is recommended that smell and smell-avoiding strategies are integrated into all phases of sanitation promotion programmes, from investigatory, to design, and maintenance planning.

Keywords: sanitation, smell reduction, sanitation promotion, sanitation intervention

INCREASING ACCESS TO SANITATION is part of the Millennium Development Goal number seven on Environmental Sustainability and has become a top priority for many low-income countries, where no or poor sanitation adds to a substantial burden of diseases and reduces quality of life. But many sanitation programmes have failed to convince people to invest in and use sanitation facilities, especially latrines. Studies from various parts of the developing world have highlighted several barriers to latrine adoption including high costs, dependency on subsidies, poor installation and maintenance, cultural unacceptability, and inadequate community involvement (Evans et al., 2010). A substantial body of evidence is now available on a complex of behavioural motivators determining use and investments in latrines, for example in the studies of Jenkins and Curtis (2005) from Benin and Jenkins and Scott (2007) from Ghana. A small body of literature has highlighted the importance of sensory motivators for sanitation. Extensive formative research from Curtis and Biran (2001) across many countries has highlighted the issue of disgust, while van der Geest (2007) has conducted anthropological studies of toilet behaviour, and argues that taboos, rituals, myths, and aesthetics in particular are fundamental issues to understand defecation behaviour and latrine preferences. But

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few authors have published work on the specific sensuous aspect of *smell* in relation to sanitation promotion. In this paper, I have compiled knowledge on smell and sanitation and share my experiences from field research in Vietnam, Ghana, and Kenya. The paper argues that *bad smell* presents an important but often overlooked barrier for successful latrine adoption.

Smell and latrine adoption

Experiences with sanitation promotion in Africa and Asia have indicated that foul smell is a barrier for acquiring and using latrines. Surveys conducted in rural Niger and Malawi showed that up to 25 per cent of latrine owners perceived bad smell from human faeces to be a major disadvantage of installing a latrine near the home (Grimason et al., 2000; Diallo et al., 2007). Past and ongoing research in Ghana, a country where 57 per cent of the population uses public latrines, has shown that foul smell is perceived to be a major impediment to household latrine adoption (Van Der Geest, 2007). Children represent another huge population group, with important sanitation needs. Despite a strong focus on school sanitation in development programmes, few studies have investigated children's own perceptions of barriers to the use of sanitation (see for example the 'Wash for Schools' home page, World Bank initiative: www.washinschools.info). Research among disadvantaged ethnic minorities in Northern Vietnam, children in Scandinavia, and schoolchildren in rural Senegal showed that stinking urinals and toilets were perceived as a major barrier preventing children from using school toilets (Lundblad and Hellstrom 2005; Sidibe and Curtis 2007; Xuan et al., 2012). Observations in Ghana and Vietnam also show that adults and children prefer alternatives to latrines including open defecation sites at dunes, beaches, fields or hills, because of their 'fresh air', 'natural ventilation', and absence of bad smell (Xuan et al., 2012). In summary, being confronted with bad smells from latrines is a major barrier to sanitation adoption across continents.

Smell and perceptions of health hazards

But why does smell trigger such strong reactions? Miasma theories, in which particles from bad smells are associated with contamination of the air and causing disease, have existed in China and Greece since ancient times and were accepted in the West as medical theories in the 17th century – long before concepts of bacteria, pathogens, and germ theories were formulated. Several sanitation studies have shown that biomedicine and progress in sanitation design have not been able to undo these beliefs in the contagious powers of smell. Rural farmers in Vietnam have thus described smells from human faeces, which they use as fertilizer, as 'dangerous' and fear its contaminating powers while associating no health dangers with manual handling and application of the stored faecal matter in the field when it does not smell bad (Knudsen et al., 2008). Instead, farmers wear mouth covers to avoid the dangerous smell from 'penetrating the body via airways' and creating disease. In

Ghana, women report that the 'hot air' and bad smell from pit latrines invades their bodies, causing the disease called 'white' (vaginal candidiasis), a fungal infection characterized by thick, white vaginal discharge (Bernard Keraita, personal communication, from the Volta Research and the SUSA-Ghana research project, peri-urban Accra, Ghana). So although effects of smell have not been quantified and do not correspond with current biomedical germ theories, case studies have shown that latrine users tend to associate smell with health hazards.

The social, moral, and aesthetic aspects of smell

Smell also plays a key, but often unnoticed, role in constructing values of moral, health, and aesthetics. The famous 'hygiene anthropologist' Mary Douglas suggests that humans perceive and categorize things as waste and dirty when they represent 'matter out of place'. Bodily waste such as faeces, therefore, needs to be controlled to avoid disturbing social and cultural order (Douglas, 1966). Hygiene and sanitation researcher, Valerie Curtis, also summarizes from her hygiene research across several African, European, and Asian contexts, that people generally worry much more about avoiding social and aesthetic 'dirtiness', rather than 'physical and biomedical parasites' (Curtis, 2001). The social and moral problem with smell is that it is very difficult to contain and control. The hygiene industry has long capitalized on this knowledge by 'selling' positive values of beauty, health, and morals with fragrant soaps, perfumed detergents, and scented toilet paper with lush names. This realization seems to be largely absent in the sanitation sector, where the driving argument for sanitation often is to 'improve public health' even after hygiene research has shown that people tend to worry a lot more about avoiding social 'evils' such as shame and disgust rather than physical and biomedical health risks. People tend to associate 'pleasant, positive, and healthy smells' with personal characters and good morals. People therefore naturally disassociate themselves from foul smells. In Ghana, some users of public latrines remove their outer clothing before entering a latrine, to avoid smell 'clinging to their clothes' after using the facilities (unpublished data, SUSA Ghana research project, peri-urban Accra, Ghana). Even where open defecation is a socially accepted practice, such as among the ethnic minorities of Northern Vietnam, people still worry about not 'sitting in the wind direction' in danger of being discovered and associated with the foul smell of faeces (Rheinländer et al., 2010). Social conflicts related to smelly latrines have been reported in Ghana between sanitation service providers and communities (unpublished data, SUSA Ghana research project in peri-urban Accra, Ghana) while in Vietnam having one's own pour-flush latrine was perceived as preventing social conflicts, since these latrines could not 'smell and annoy neighbours' (WSP-EAP, 2002). In Northern Vietnam, some pig farmers have adopted biogas systems that receive both human and pig excreta. A major benefit of this system, according to farmers, is that the biogas effluent does not smell, meaning that farmers can maintain good relationships with their neighbours (Anders Dalsgaard, the SUSANE project, personal communication). These examples show that people feel strongly

intimidated by smells from other people or shared latrines, while the smell from one's own latrine is more socially accepted. Hence, smell not only transgresses bodily, but also moral and social borders and carries strong negative connotations of social humiliations and dangers to health.

Strategies used to tackle smell

Smell 'chasers': the user response

Over the years, latrine users have developed their own strategies to reduce smell from latrines. Observations have shown that people pour wood ash, disinfectants, pesticides, oil, laundry and soapy water, detergents, car-battery acids, and a range of other substances into the latrines to reduce smell. In rural Kenya and Malawi, pit latrines have traditionally been sited away and on the leeward side of households to avoid smell drifting into houses. This is now observed as changing because of limited land and increasing safety and privacy concerns, as well as limited access to latrines away from home for children and the elderly. Households have also traditionally used naturally scented substances as air fresheners to neutralize foul smells, for example in Kenya, where households plant sweet-scented flowers around pit latrines, while in northern Pakistan, leaves from the aromatic bush *horsay* are used in latrines. In school latrines in Senegal, burning incense, described by children as emitting a 'magical smell', has been effective in making children use toilets (Sidibe and Curtis, 2007). Today, the market for synthetic *smell chasers* such as air fresheners and scented cleaning agents is also on the increase in low- and middle-income settings and 'good smell' is now being promoted by many private companies as a powerful market strategy.

Smell-free latrine designs: the technologists' response

Latrine technologists have also responded with new or modified latrine designs to reduce smell. It is now widely recommended to attach a tight-fitting lid to cover the dropping holes of simple pits to 'cover away' smell (Brikké and Bredero, 2003; Tilley et al., 2008). The ventilated improved pit (VIP) latrine was also invented with the purpose of eliminating bad smell in the latrine, via a vent pipe through which wind creates a circulation of air, sucking out the smelling gases and drawing in fresh air to the latrine. Dry sanitation systems, such as urine-diversion and composting toilets, typically perceived as very smelly, have also been technically advanced to eliminate or contain foul smell. Simple solutions include adding absorbent materials onto the faeces such as ash, shredded leaves, or sawdust, making the faecal matter dry faster, and keeping urine in tightly covered containers to prevent emission of smelling gases (NWP, 2006). Smell reduction is a crucial part of the more advanced and expensive water-based latrine designs such as pour and water-flush toilets. Water seals, such as those created by a 'U'-bended pipe placed underground, are used to prevent smells from re-entering the house through the waste pipe (Tilley et al., 2008). Even more sophisticated odourless and vacuum toilets are now marketed, all aiming to

stem bad smell from our houses. Hence, there is a range of technological options available to reduce smell from latrines; however, high costs and proper installation still remain a huge challenge, especially for low-income populations without water for a flush toilet and little cash to invest in anything more advanced than a dry toilet. Nevertheless, recent approaches such as ‘human-centred approaches to sanitation’ as used in Cambodia and Ghana including social marketing, are important steps towards increasing cost differentiated technological choices to fit with users’ demands (WSUP, 2011; WSP, 2012).

Good operation and maintenance: the management response

Good maintenance of latrines is paramount to reducing smell from sanitation facilities. In recent decades there has been much focus on increasing coverage and inventing low-cost design while maintenance is still under-prioritized. Many latrines especially in public places and schools are therefore characterized by leaking and broken seals and pipes, overcrowding, faeces-littered surfaces, lack of flushing water, and blocked and overflowing pits and tanks. Continuous focus on clean and appealing latrines should be a top priority for public as well as private companies servicing public toilets at schools, hospitals, markets, bus terminals, etc. Training and practical instructions on how to do this at community level and at public institutions should receive strong focus in any sanitation promotion programme to reduce the bad smell and make a toilet visit the preferred defecation strategy.

Conclusion

Smell must be seen as a key factor influencing sanitation behaviours of millions of people across cultures and socio-economic contexts. Smell must be taken more seriously in future sanitation programmes and it must be clear to sanitation promoters that financial, biomedical, or public health arguments will not be effective, if local perceptions of smell, contamination, and health hazards carry more weight when choosing and using sanitation facilities – perhaps causing people to adopt what we as public health experts perceive as ‘unhygienic sanitation behaviour’. Avoiding bad smells is strong in people’s minds, and should also be so in investigative, design, construction, and maintenance phases of any sanitation project and promotion.

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