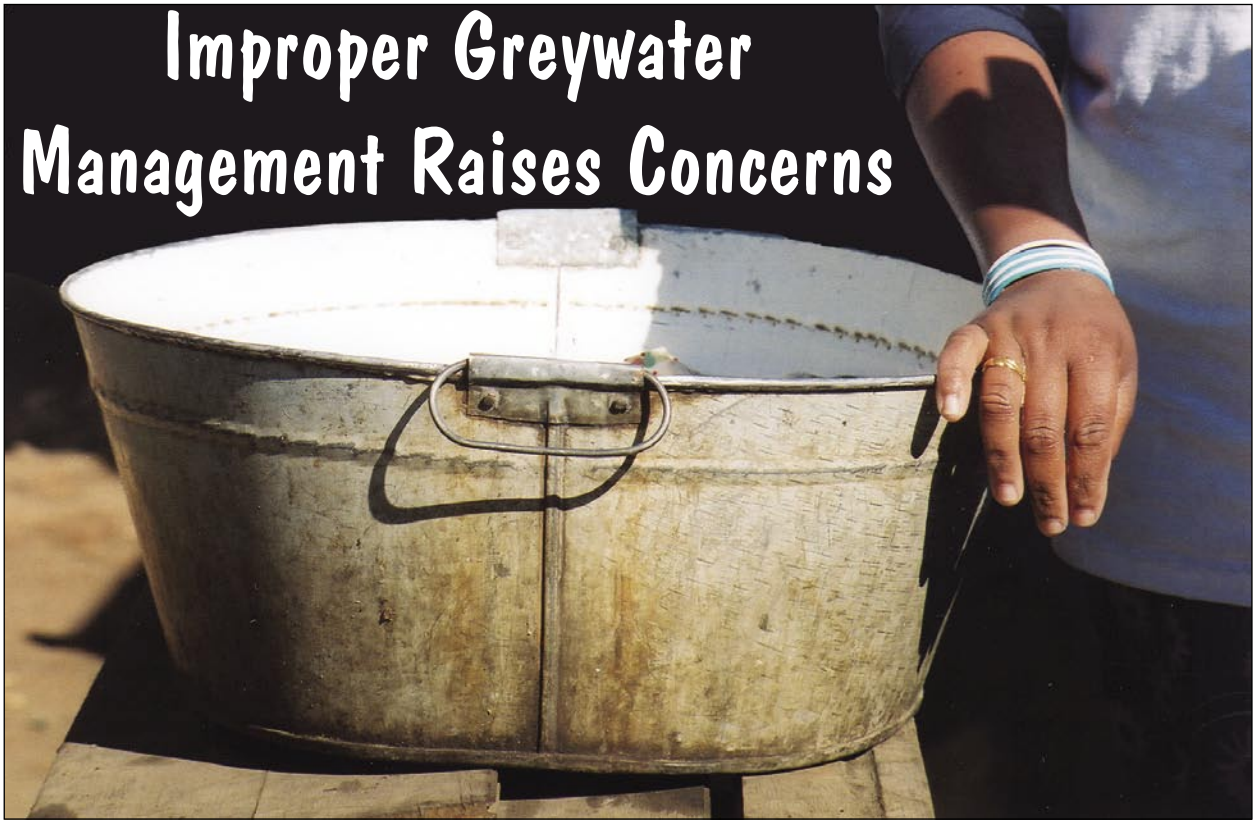
Improper Greywater Management Raises Concerns



An ongoing study by the University of Cape Town (UCT) is revealing an urgent need for improved greywater management in South Africa's urban and peri-urban settlements. The study, which is being funded by the Water Research Commission, aims to evaluate existing greywater management practices in non-sewered areas with the view of coming up with recommendations for best practice. Lani Holtzhausen reports.

Many of South Africa's townships have been connected to municipal water supplies in the last ten years as part of Government's efforts to eradicate the backlog of those without access to clean water. Water provision in these areas is more often than not through a public standpipe or a yard connection outside the home.

In this process, however, little attention is generally given to the management of greywater. As a result, this water – the wastewater produced from household processes such as washing dishes, cooking, laundry and bathing – is randomly tossed outside.

What makes matters worse, reports Kirsty Carden of the UCT Greywater Research Team, is that many of these settlements have dysfunctional or inadequate sewerage systems. All of this creates a serious hazard to the health of the community as well as the surrounding environment.

HEALTH HAZARD

"Improper greywater management can lead to a variety of health concerns, including mosquito breeding (from ponding of greywater); contamination of drinking water supplies; and odours from stagnant water," Carden tells *The Water Wheel*. "There is also a risk of transmitting waterborne diseases if the greywater has been cross-contaminated with faecal waste. Children are especially at risk as they play in this dirty water. They get the water on to their hands, clothing and bodies, later transferring this to their mouths, which can result in diarrhoea and other waterborne diseases."

It is clear that greywater management is not receiving enough attention, particularly in informal settlements. "Our research indicates that there does

Children are particularly at risk as they play in polluted water.

Top left:
Improper management of greywater – the wastewater from activities such as cooking, washing dishes, bathing and laundry – remains a huge headache in the majority of South Africa's peri-urban settlements.

Bottom left and right:
The lack of adequate greywater disposal facilities often results in this water randomly tossed outside.

not seem to be a lack of knowledge by the local authorities – they are only too aware of the problems on the ground in informal settlements, but the planning in this respect seems to be lacking," notes Carden. "This seems to stem from the fact that the provision of water to all citizens is being prioritised by Government together with emphasis being placed on dry sanitation options, but they do not appear to have taken into account disposal options for greywater."

She adds that there is also a concern that dwellers lack the political or institutional structures and organisation to deal with the problems of pollution in the settlements in which they live. "There is a perception that by tolerating these conditions it will either provide a strong rationale for upgrading these areas to formal housing and water reticulation systems, or that by making advances on the local authority they will jeopardise their chances of acquiring formal houses."

The multi-disciplinary team from UCT is currently conducting surveys throughout the country. Social surveys of current and potential greywater management and recycling activities are being carried out in selected communities. Cultural practices pertinent to water use and management are also being examined to determine whether these hinder or promote the adoption of greywater recycling.

INTERESTING RESULTS

While findings of the study will only be finalised in April next year, initial research has shown some interesting results. In the Western Cape, for example, many respondents complained of the possible health implications of mosquito infestations, stagnant water and smells that result from inadequate sanitation services and greywater disposal practices in the settlements.

While the team has not yet investigated specific environmental impacts of ill-disposed greywater, there are concerns. Three of the surveyed sites in the Western Cape are positioned close to sensitive wetlands and/or river systems.

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"From our limited water quality sampling the indications are that the greywater in non-sewered settlements has very high levels of phosphates. This is an area of concern from the point of view of greywater entering surface water bodies," reports Carden. "Other concerns for sensitive

Bottom left:
University of Cape Town student Thiyane Suda questions a resident in Mayfield, Gauteng. Existing greywater management practices are being evaluated in non-sewered areas throughout South Africa.

Top and bottom right:
University of Cape Town student Tsako Baloyi takes water samples in Mayfield, Gauteng, as part of the greywater management survey.

wetlands and streams include the low levels of dissolved oxygen in the greywater, elevated "oil and grease" levels and microbiological contamination. In general, the most observed impact on receiving water bodies, particularly lakes and wetlands, is the possibility of them becoming overfed with nutrients, leading to eutrophication and algal blooms. This often has dramatic results, especially when blue-green algae release poisonous toxins into the water body," she says.

Regarding its quality, greywater generally contains high levels of pollution emanating particularly from the use of household chemicals and detergents. "Of particular interest is the fact that phosphate levels seem to be higher in greywater samples where lower-priced detergents are used, although this assumption has not been fully tested yet," notes Carden. Limited microbiological testing was conducted that generally showed high levels of faecal contamination in the greywater samples, thereby limiting the potential for reuse.

It has become apparent that greywater is not the primary cause for concern among most residents of informal settlements, and that the provision of toilets, houses, water and electricity are deemed to be far more important. Reuse initiatives are, therefore, not well supported, with most people suspicious of the quality of the greywater and the possible associated health impacts.

THE WAY FORWARD

Carden believes that national government needs to take greywater management into account in its specification of minimum levels of service to poor communities, particularly in high-density settlements. In addition, methods of reducing levels of phosphate in greywater need to be investigated, possibly by discouraging the use of high-phosphate detergents. "Planning and implementation, however, must be done at local level, with municipalities being specifically tasked with the responsibility of managing greywater problems in cooperation with the communities themselves." (The required tools for both assessing and managing greywater disposal options at this level will be one of the outputs of this project).

"The key to successful management appears to lie with the attitude of the communities towards the greywater problem as well as the level of commitment by the local authority concerned," says Carden. "It is essential that greywater be properly managed to reduce health risks by eliminating inappropriate disposal, as well as to provide benefits in terms of reuse."