

NEWSLETTER FOR SANTAG

WATER RESEARCH COMMISSION REPORTS

The Water Research Commission (WRC), based in Pretoria, has produced a considerable number of reports on water and sanitation issues in South Africa. These reports constitute a valuable resource for those working in the sector, and are available from the WRC. In this OUTLET, summaries of some 33 reports, considered most relevant to stakeholders in the sanitation sector in KwaZulu-Natal, are listed in six categories.

LOCAL GOVERNMENT



The District Services Model (DSM) has been designed to assist district municipalities to undertake financial analysis of infrastructure investment plans. This Manual outlines the philosophy behind the DSM, its aims, limitations and key assumptions. The model can be used to assist with a wide range of decisions, such as an examination of the financial implications of the infrastructure service component of a district-wide regional development plan.

**National Community Water and Sanitation Training Institute: Background and Overview of Management of Community Water and Sanitation Training Programme for Local Government Training Programme (WRC Report 880/1/00)**

Local government must ensure that all communities have access to affordable basic services such as clean water, waste removal and sewage. The backlog is worst in rural areas, and this applies also to the capacity of people to control and manage the services they need on a sustainable basis.



Capacity building within local government is essential to ensure administrative, financial and technical viability of services. A learning requirements analysis indicated that councillors and officials tasked with delivery of water and sanitation services need exposure to local governance issues; human and resource management; development and financial management; project planning, implementation and operation and maintenance; sustainability of projects; technical issues and environmental sanitation and solid waste management. Ultimately seven volumes of learning materials were developed for the training of councillors and local government officials tasked with water and sanitation delivery.

**Palmer Development Group: Financial Planning for Infrastructure Services at District Level: A User Guide to the District Services Model, Version 1.1 (WRC Report TT 143/01)**



The powers and duties of district municipalities have been spelt out in the Municipal Structure Act, and require district municipalities to ensure the provision of various infrastructures within their areas, including water and sanitation services. The Act requires district municipalities to take up the responsibilities of other local government structures where these structures are unable to perform their functions.

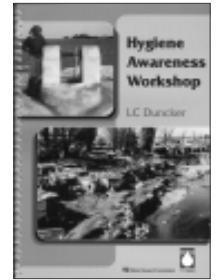
# HEALTH AND HYGIENE AWARENESS



## Hygiene Awareness

### LC Duncker: *Hygiene Awareness Workshop* (WRC Report TT 145/00)

This is a step by step guide on how to conduct a Hygiene Awareness Workshop. It is made up of a series of practical activities that help to illustrate the concept of "hygiene". It looks at hygiene and at diseases within the community, and at old and new belief systems, as well as ways of effecting behavioural changes. In addition participants design a monitoring system whereby they can measure the impact of their training.



### LC Duncker: *The KAP Tool for Hygiene. A Manual on Knowledge, Attitude and Practices study for Hygiene Awareness in the rural areas of South Africa* (WRC Report TT 144/00)

This Manual is primarily for people involved in water supply and sanitation, and health and hygiene projects in rural areas. It should enable researchers to gather information regarding the hygiene situation of rural communities. This information-gathering tool is based on the KAP (knowledge, attitudes, and practices) study developed by the World Health Organisation, and focuses on hygiene issues in rural areas. The emphasis of this KAP tool is on the gathering of qualitative data to determine knowledge, practices and attitudes, and not on statistical analysis of the data. It can be used to evaluate the impact of hygiene intervention in communities. This manual is sensitive to gender issues, and can be used together with the guide on how to conduct a Hygiene Awareness Workshop.



## Multi-media

### S Ward, K Hall & A Clacherty: *Incorporation of Water, Sanitation, Health and Hygiene issues into Soul City, a multi media edutainment vehicle* (WRC Report 981/1/00)

"Soul City" is a multi-media health education and entertainment strategy, which uses the mass media as a vehicle to communicate health and development messages. Health messages should resonate with people's real life experiences, and encourage individuals and communities to feel empowered to make changes to their water and sanitation attitudes and practices.

The mass media should support localised health promotion and development strategies, by promoting broad awareness and generic messages. The best agents to embark on health promotion programmes are community health workers (CHWs) and primary health care teams, including environmental health officers (EHOs). Research findings were used to inform the development of a reference manual for EHOs and CHWs. This manual is entitled "*Breaking the Rules: New Approaches to Promoting Health through Water and Sanitation in South Africa.*"

### M Skhosana: *The Impact of Multi Media in the Education and Promotion of Health Awareness - A Pilot Study in Mamelodi* (WRC Report KV 277/01)

The "multi-media health promotion strategy" uses the concept of "edutainment", which asserts that people learn while being entertained. The screening of "Soul City" as an educational vehicle was part of this campaign to make appropriate use of radio, television and print media for health promotion. This took the form of a 13-part television drama; a 15 minute radio drama in 8 languages; and serialised booklets as inserts in 10 newspapers. The central message conveyed was that clean water and good sanitation are central to good health and hygiene practices.

A pilot study in Mamelodi was done to establish whether the messages of "Soul City" had a long-term impact. The results revealed that respondents mostly viewed the television series as fictional entertainment. The report recommended that national initiatives like "Soul City" needed to be supported by localised health and hygiene programmes, so that the context could be better understood and the message more effective.



### LC Duncker: *Hygiene Awareness for Rural Water Supply and Sanitation Projects*, (WRC Report 819/1/00)

Hygiene education comprises a broad range of activities aimed at changing attitudes and behaviours, to break the chain of disease transmission associated with inadequate water and sanitation. Hygiene education ensures improved health and the sustainability of projects after the withdrawal of the assistance of technical experts.

The ultimate aim of this research project is to impact on the general quality of life of rural communities, by making them aware of their hygiene situation in order to facilitate a change in behaviour towards a higher level of general and personal hygiene and health.

### KM Bility and H Onya: *Water Use, Sanitation Practices, Perceptions and Hygiene Education in Primary School Children in the Northern Province and Western Cape, South Africa* (WRC Report 960/1/00)

Water and sanitation provision at rural, farm and peri-urban schools is generally grossly inadequate. This has a negative impact on learners' health, and interferes with their learning. Health and hygiene awareness is fair, but practice does not accord with knowledge. Curriculum development should focus on the development of teaching materials and methods that can address the gap between understanding of health and hygiene knowledge and actual practice. The context and practice of health and hygiene awareness must be similar in both home and school environment. The "Health Promoting School" approach addresses these issues, and should be supported by the relevant government departments.



# HEALTH AND HYGIENE AWARENESS



## Participatory Development Management (PDM)

G Schoeman, D De Waal and M De Bruyn: *Field Guide: Participatory Development Management (PDM), an Integrated and Empowering Development Approach* (WRC Report TT 88/97)

Participatory Development Management (PDM) depends on some understanding of the development process when implementing water, sanitation and waste projects, together with a desire to "add value" to communities. It assumes that communities need committed local leadership and effective rural institutions to implement programmes.

This Field Guide is suitable for use by community and project developers, and should provide a solid base for implementing broad-based, participative project development. It aims to describe the milestones that need to be achieved or incorporated to allow participative project development.



P Pybus, G Schoeman, and T Hart: *The Level of Communication between Communities and Engineers in the Provision of Engineering Services* (WRC Report TT 133/00)

Water supply and sanitation projects must not be regarded only as the provision of infrastructure, but also for the development of a service support organisation, integrated with the facilitation of local economic development. Appropriate and effective communication involves a dialogue between two active participants, and requires an inter-disciplinary approach that strives to gain a real understanding of the local context in a collaborative manner.



If you have any information you would like to share, contact OUTLET editor Louise Torr at :  
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## Your Water Rights (TT 171/02)

This poster documenting "Your Water Rights" covers policy and the legislative framework, providing water services, people's rights under the Water Services Act, and how communities can meet their needs.



## LC Duncker: *Strategies for Empowerment of Women in Water Supply and Sanitation Projects* (WRC Report 817/1/00) [out of print]

Gender means men and women, and focuses on the social differences between men and women. The objectives of the report were to

- Analyse the role of women's involvement in water supply and sanitation projects in the Northern Province and Eastern Cape
- Analyse the impact of women's involvement in water and sanitation projects on the empowerment of women
- Assist in the development of strategies for the enhancement of women's role in water and sanitation.

## Findings and Conclusions

- Men played prominent roles, and were seen by both women and men as leaders and decision makers.
- Men were regarded as superior to women – and were therefore uncomfortable when women participated at meetings on a formal basis.
- Women tended to prefer men to deal with outsiders as men were regarded as more educated. Men generally were more educated than women.
- Migrant labour meant that women often had to make decisions.

## Impact of women's participation in water supply and sanitation projects

While there was no difference as far as effective delivery of water and sanitation services were concerned, when men took the lead and managed the projects, there were problems regarding involvement and commitment of the community, and low willingness to take ownership and responsibility for the services. In villages where women performed key roles, as chairperson or treasurer, projects had greater acceptance.

## Barriers to the empowerment of women

Water supply and sanitation projects did not necessarily empower women, but did create opportunities for women to become empowered should they want to. Obstacles identified were:

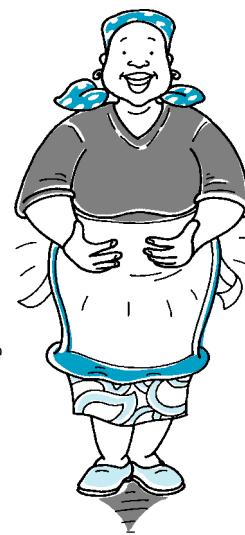
- Women's own attitudes and lack of confidence, exacerbated by the attitudes of men, which were closely linked to traditional culture and beliefs that men are superior to women and therefore decision-makers.
- Traditional culture voiced by men was a major barrier to becoming empowered. The process of cultural change was already well advanced, and tradition was changing, as demonstrated by the expressed willingness of the men to allow women to make decisions and participate in management.
- Women were illiterate and had received no formal education and training. There were time constraints because of their household duties, lack of access to money, transport, etc.

## Recommendations

*Implementation Plan:* Change in attitudes and perceptions regarding gender need a number of interventions, and a "culture" of gender awareness should be facilitated

*Development of gender awareness programme* at grassroots level needed attention.

The gender awareness programme for rural areas should grow and develop into an empowerment programme for both men and women.



# COMMUNITY WATER SUPPLY AND SANITATION



## J Cain, P Ravenscroft and I Palmer: *Managing Rural Water Supply in South Africa* (WRC Report TT 126/00)

This research project was undertaken to develop appropriate operation and maintenance management arrangement options for rural water supply projects. Management options developed were based on grass-root input from communities and local stakeholders, and developed within the framework of the Water Services Act. The project looked at institutional, management, financial and technical arrangements. It was found that communities and committees exhibited a broad sense of ownership; that training contributed to the relative success of projects; there was a clear demand for mixed levels of services; and that awareness of government structures at community level was poor. Projects that were less successful had failed due to political reasons at community level, compounded by a lack of clear management and technical operation and maintenance arrangements.

## LA Pearson, J Bhagwan, W Kariuki and W Banda: *Guidelines on Appropriate Technologies for Water Supply and Sanitation in Developing Communities* (WRC Report 520/1/01)

Within the rural development context, the new emphasis on sanitation and health and hygiene awareness has placed a significant demand on, and need for, documents dealing with these aspects. The guidelines have

- Provided information on appropriate technologies where this was not available before
- Emphasised an approach and methodology for implementation appropriate to the rural development sector
- Met the objectives of increased emphasis on the requirements of social development programmes as opposed to purely technical projects.

The following documents were completed:

- Ground water exploration, use and conservation
- Primary health care through improved water supply, sanitation and community education
- Springs and spring protection
- Small scale desalination
- Pumps and pumping systems
- Sanitation for rural communities.

## PJ Pybus: *Preliminary Guidelines for Private Sector Participation in Water Supply and Sanitation Services* (WRC Report KV 81/96)

This document sets out to alert institutions currently responsible for the delivery of water and sanitation services, to the variety of services available from the private sector, as well as options available for the improvement and upgrading of these services. It provides guidelines for the assessment of the quality of the service being provided, alternatives available to remedy deficiencies, and steps that could be taken should it be deemed advantageous to engage the private sector. The alternative delivery options included: service contracts; management contracts, renting of assets, investment-linked contracts, and privatisation.

## CSIR Division of Water Technology: *Guidelines on the Cost-effectiveness of Rural Water Supply and Sanitation Projects* (WRC Report 231/1/93)

Two main components are necessary to enhance the success of water supply and sanitation projects, viz.:

- Community involvement in all phases of the project, including planning and decision making
- The use of appropriate technology solutions for the provision of water and the disposal of human wastes to ensure the long-term sustainability of such systems.

Aspects requiring particular attention with respect to the provision of water supply and sanitation services in rural areas include:

- Education and training for committee functioning and management, for maintenance, construction and surveillance.
- Appropriate technologies, such as rainwater harvesting, small dams, disinfection methods for small water supplies, desalination, water dispensers, water storage tanks, village level operation and maintenance handpumps.
- Privatisation of many of the functions related to water supply in rural areas
- Updating of guidelines by specialist people working in the field.



# COMMUNITY WATER SUPPLY AND SANITATION



## **N Motaung: A Pilot Environmental and Social Baseline Study for Rural Water Supply and Sanitation Projects (WRC Report KV 134/01)**

This study aimed to develop a methodological model for conducting baseline assessments for rural water supply and sanitation projects. The model advocates an approach, strategy and plan that alerts researchers to the social processes that need to take place alongside the implementation of the methodological aspects, in order to sensitise research to its social responsibilities. Social processes that need to take place alongside implementation include interactive participation, capacity building and income generation. The social engagement of stakeholders is vitally important, particularly the sequencing of activities. The areas of baseline assessment should be community functioning, to implement people-driven and sustainable basic water supply and sanitation projects; and environmental features, such as health, hygiene and the quality of life.

## **K Wall: A Resume of World Bank Water and Sanitation Experience of Value in South Africa (WRC Report KV 126/00)**

The emphasis of this report was on studies documented by, and current thinking in, international agencies, especially the World Bank.

The findings of the study included:

Challenges facing developing countries in infrastructure provision are formidable, especially in the water and sanitation sector. The cost of providing services is rising because of rapid urbanisation; and provision is further hampered by limited government budgets and weak management of public institutions. The challenge is to complete the "old agenda" of providing household services.

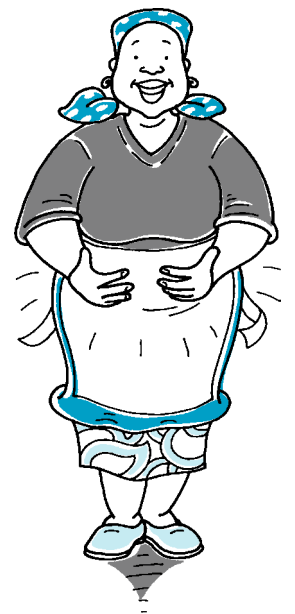
The "new agenda" involves environmentally sustainable development. This is especially challenging in developing countries where water is more seriously degraded and deteriorating rapidly; and where limited financial resources are available for environmental protection. Institutional capacity is also weaker.

International agencies involved in water and sanitation provision have shifted from

- Emphasis on single focus projects (e.g. technology, preventative health and hygiene education) to
- Integrated approaches to the provision of infrastructure and health.

Other emphases were:

- From attention to rural areas to cities
- From top-down to judicious mix of top-down and bottom-up
- From focus on constructive costs of facilities to focus on lifetime costs of facilities, including operation and maintenance
- Need for environmental sustainability of projects.



## ISIZULU SUMMARY

# URBAN AND PERI-URBAN SANITATION



- Who pays for water and sanitation services?
- What you need to know when negotiating for water and sanitation services.

## Palmer Development Group: *Water and Sanitation in Urban Areas: Survey of on-site conditions* (WRC Report 561/1/94)

This project aimed to evaluate conditions affecting water and waste services on sites where backyard shacks have been constructed, and to determine to what extent people in informal dwellings have access to water on site, have access to toilets (and what they use as alternatives), and the implications of solid waste storage and disposal on stormwater run-off quality. The survey found that (because the main household derives an important source of income from rentals) most backyard shack-dwellers had better levels of access to services than those people living in informal and squatter settlements, with no dedicated, or only rudimentary services. However, uncontrolled solid waste export from sites, and the overtaxing of bulk sanitation systems, lead to discharges into receiving water bodies through overflows and breakages, causing environmental and services provision problems.

## Palmer Development Group: *Water and Sanitation in Urban Areas: Financial and Institutional Review*

These projects originated out of the Water and Sanitation 2000 initiative, which addressed the need for unified and concerted action in the water and sanitation sector to meet the large and increasing need for adequate services in both urban and rural areas. The overall objective was to present information and analysis to help community leaders and decision makers to:

- Promote the extension of services, and the reshaping of organisations so that all people in the urban areas of South Africa are enabled to have adequate and appropriate water supply and sanitation
- Facilitate the related processes of financial, institutional and other changes that the implementation of these services will require.

The following reports ensued:

1. Overview of institutional and financial arrangements in water supply and sanitation (WRC Report No. 571/1/94)
2. Overview of the demand for and costs of water supply and sanitation services in South Africa (WRC Report No. 571/2/94)
3. Meeting the demand for water and sanitation services: getting it right in the transition (WRC Report No. 571/3/94)
4. International perspectives (WRC Report No. 571/4/94)
5. Macro-economic sketch (WRC Report No. 571/5/94)
6. Summary report (WRC Report No. 571/6/94)

## G Pegram and I Palmer: *The Applicability of Shallow Sewer Systems in South Africa* (WRC Report TT 113/99)

The level of sanitation service provision is a contentious issue for urban service provision. Shallow sewerage is a viable intermediate alternative between on-plot VIPs and full waterborne sewerage. Developed by South American engineers in the 1980s, it is an attempt to provide an affordable sanitation alternative for dense, and often unplanned, urban settlements. This involves:

- A relaxation of the typical technical specifications of conventional sewerage to reduce construction costs.
- Block sewers, located on residents' plots or on sidewalks, to reduce the length and depth of piping.
- Responsibility for maintenance of the block sewers may be delegated to the residents, thereby reducing the operating costs incurred by the service provider.



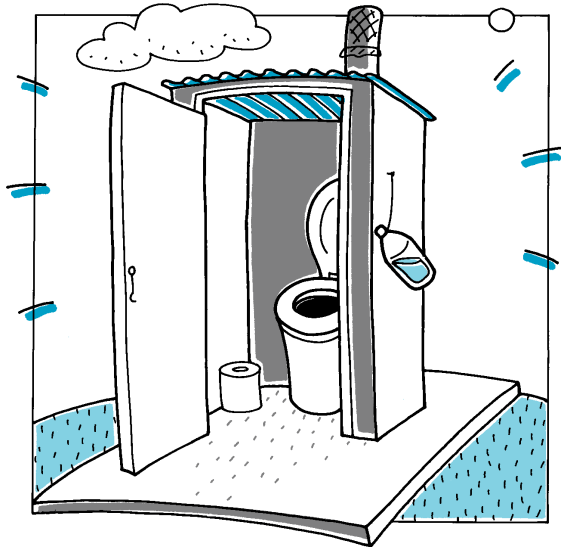
## Palmer Development Group: *Water and Sanitation Handbook for Community Leaders (Urban & Peri-urban)* (WRC Report TT 68/95) [in isiZulu]

This user-friendly handbook aims to help communities understand how water and sanitation systems work. It is illustrated with clear technical options, showing

- How water gets into a tap
- How sewage is removed and where it goes
- How water supply and sanitation systems rely on each other
- Different water supply systems and how they work
- Different sanitation systems and how they work
- Who should provide water and sanitation services?
- Having water and sanitation services installed when houses are built
- How much water do we use?
- The cost of water supply and sanitation systems



# ON-SITE (RURAL) SANITATION



## **JW Bester and LM Austin: *Design, Construction, Operation and Maintenance of VIPs in South Africa* (WRC Report 709/1/00)**

The VIP, when correctly designed, operated and maintained, is an acceptable, cost-effective, hygienic and environmentally-friendly sanitation system. Because of the direct link between sanitation services and public health, levels of sanitation must be adequate and affordable. Community acceptance of VIPs is centred around design and construction issues, social issues and environmental and health issues. The coexistence of three integral factors for promoting community health is emphasised, viz. safe water supplies, adequate sanitation facilities, and the correct disposal of refuse. The manual deals with the operational principles of both VIPs and VIDPs, proper ventilation, fly and odour control, and regular maintenance and pit emptying.

## **Bernhardt Dunstan & Associates: *Evaluation of On-site Sanitation from a Socio-economic Perspective* (WRC Report KV 114/98)**

This research examines on-site sanitation systems from a socio-economic perspective, equal to technical assessments. This involved looking at whether the system was socially and culturally acceptable to communities; whether it was affordable in terms of installation, operation and maintenance; how it affected minority groups such as women, the elderly, the blind, the disabled and the very young; whether the operation and maintenance was easily understood by all who used it; and whether the system was upgradable. The conclusions were that people generally were dissatisfied with their sanitation systems, believing that these were inferior to water-borne systems. In some areas people did not relate the product to affordability, reflecting a need for a massive education campaign before sanitation systems can become viable.

## **Bernhardt Dunstan & Associates: *Handbook to Guide Communities in the Choice of Sanitation Systems* (WRC Report TT 104/98)**

The purpose of this report is to make key findings of research accessible to communities who are beneficiaries or potential beneficiaries of sanitation projects, so that they can be assisted in their decision-making through background information. The research looked not only at technical assessments, but also at social and cultural acceptability of sanitation systems, affordability in terms of installation, operation and maintenance; the needs of women, elderly, disabled and the very young; whether operation and maintenance is understood, and whether the system can be upgraded.



## **Palmer Development Group: *Review of Rural Sanitation in South Africa* (WRC Report KV 71/95)**

Rural areas suffer massive backlogs regarding the provision of adequate sanitation. Access to adequate sanitation reduces the incidence of disease, and brings relative comfort and ease to the daily routine of toilet use, thereby enhancing the quality of life. This report placed emphasis on the establishment of

- a National Task Team to co-ordinate at a national level, made up of committed people from the public and private sectors, responsible for setting up a national programme, and establishing capacity at provincial and district level to take this programme forward.
- a policy framework, and getting widespread support for this, and looking at the issues of subsidy levels, methods of financing, choice of technology and local institutional structures.

## **JR Howard, B Olen, K Eales, S Douglas, N Quinn and R Voller: *The Development of an On-Site Sanitation Planning and Reporting Aid (SSPRA) for the selection of appropriate sanitation technologies for developing communities* (WRC Report 586/1/00)**

Upgrading sanitation must consider technical considerations, as well as the level of support and preparedness of individual users, in terms of affordability on the part of both the users and service providers; cultural norms and perceptions, and preferences of users. Failure to integrate all the variables into the planning of sanitation projects, and in selecting sanitation technologies, provides the background to many failed attempts at sanitation delivery. A comprehensive planning tool was developed that integrates the variables, while also providing for transparency and accountability in decision-making. This was known as a Site Sanitation Planning and Reporting Aid (SSPRA), to be used as an aid for the selection of appropriate sanitation technologies for developing communities. This tool attempts to anticipate the full range of non-technical considerations, and assign a weighting to them, so as to provide users with a number of issues in a structured and interrelated way.

## **J Howard, N Quinn, K Eales and R Voller: *The Development of an On-Site Sanitation Planning and Reporting Aid (SSPRA) for the selection of appropriate sanitation technologies for developing communities: User Manual* (WRC Report 586/2/00)**

The Site Sanitation Planning and Reporting Aid (SSPRA) is intended for planners, supply agencies and others who provide services to developing communities. It is not intended for use directly by communities, although the full participation of the end users is a key element of the SSPRA. The tool does not take the place of sound decision-making, and consequently does not provide the user with a decision in the form of a chosen technology. It is merely a mechanism whereby information relevant to planning and technology selection can be formally organised and used as the basis for informed decision-making in sanitation planning and technology selection.

## **A Lagardien and D Cousins: *Improving Sanitation on Farms: Lessons from the Farm Dweller Sanitation Pilot Programme and the emerging Western Cape Model* (WRC Report KV 132/1/01)**

Sanitation backlogs are most acute in rural areas. Farm dwellers on privately-owned land are particularly vulnerable as they do not enjoy secure title. They depend on their employers for a living and a place to live. Sanitation for farm dwellers must be addressed as part of an integrated strategy by municipalities to achieve improved sanitation throughout their areas of jurisdiction. Sanitation for farm dwellers must be addressed as a component of the revised national sanitation policy, and should not be seen in isolation from other aspects of sanitation or water services provision.

# WATER QUALITY & GROUND-WATER CONTAMINATION



**AB Fourie and MB van Ryneveld: *Environmental Impact of On-site Sanitation: A literature review with particular application to South Africa* (WRC Report KV 57/94)**

Since the provision of water-borne sewerage for all urban dwellers is financially prohibitive, at least half this population should be provided with VIPs. Two issues arise: a limited understanding of the nature, extent and consequences of contamination of on-site sanitation, as well as the erroneous assumption that there is no pollution risk associated with waterborne sewerage. A national and international literature review was conducted, local case studies were detailed, and the conclusion was reached that there is emphatically a *risk* of groundwater *contamination* from on-site sanitation. The risk of contamination by bacteria and viruses is very low, but contamination from nitrates is likely.

**MB van Ryneveld, PD Marjanovic, AB Fourie and D Sakulski: *Assignment of a Financial Cost to Pollution from Sanitation Systems, with particular reference to Gauteng* (WRC Report 631/1/01)**

On-site sanitation is often seen as a potential pollutant of water resources. Concern over the environmental impact of on-site sanitation has persuaded some decision makers in urban areas to opt for full water-borne sanitation, where on-site sanitation might otherwise have been used, with advantages of cost savings in construction, operation and maintenance. This study provides a methodology for assigning a financial cost to the environmental impact of different sanitation systems; as well as an estimate of comparative costs of pollution from different sanitation scenarios in Gauteng, and in general. It also concludes that water-borne sewerage systems, which discharge directly into surface watercourses are currently the major contributor to pollution from sanitation in Gauteng. Unless the "polluter pays" principle applies, there is little incentive to use a cheaper system than full water-borne systems.

**A Wood, W Uchronska and G Valashiya: *Greywater Management in dense, informal settlements in South Africa* (WRC Report 767/1/01)**

Inability to ensure effective services in dense informal settlements commonly results in surface water pollution, as grey water, representing a threat to community health and the receiving environment. This project aimed to quantify the significance of greywater in dense, informal settlements in SA, in relation to problems of water, waste water and solid waste management. The information would be used to identify opportunities to develop low technology options for the cost-effective optimisation of integrated waste and waste water management in a form that will harness the opportunities of stormwater and wastewater management; whilst reducing health and pollution threats; and the gradual development of wastewater management to the benefit of communities, with environmental acceptability. Causes of greywater problems are generally related to poor service provision and maintenance in water supply, sanitation and solid waste management and stormwater control. Communities prioritise services in terms of the direct benefits that accrue to them, with greywater and stormwater management not recognised as services.

Until recently there was no widespread recognition of the need to integrate water, waste and environmental management services to informal settlements. Awareness needs to be raised at community level; and greywater management and control promoted as essential components of community health care programmes.

**B Genthe and M Franck: *A Tool for Assessing Microbial Water Quality in Small Community Water Supplies: An H<sub>2</sub>S Strip Test* (WRC Report 961/1/99)**

Water intended for human consumption should be safe – i.e. it should be free of pathogenic micro-organisms. Small communities in South Africa have notoriously poor water quality. Reports have shown that 80% of samples tested failed water quality guidelines. A rapid and reliable water testing method can be used successfully in small communities. Based on an H<sub>2</sub>S strip test, the water sample turns black if it is contaminated.



It can be conducted at room temperature, which means that it does not have to be transported to a laboratory, and can be used by field workers, environmental field officers and community water committees to identify where potential problems exist in the management of water quality.

Please call us if you need any of these resource materials.

Our contact details are:  
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WRC librarians Rina Winter and Judas Sindina will assist you with WRC publications.

**This OUTLET Newsletter is funded by the Water Research Commission (WRC)**

## The Water Research Commission

The Water Research Commission (WRC) is a dynamic hub for water-centred knowledge. The WRC provides leadership in research and development through the support of knowledge creation, transfer and application. The Commission engages stakeholders and partners in solving water-related problems, which are crucial to South Africa's sustainable development and economic growth, and is committed to promoting a better quality of life for all.

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