



## LETTERS TO THE EDITOR

**Information 'misleading'**

The letter received from Mr J Barnard of NMMU, 'Incorrect water treatment chemistry also causes problems', published in the July/August 2008 issue of *Water Wheel* (Vol. 7 No 4) is rather concerning.

Advocating that corrosive water can be remedied by merely adding lime to raise the pH can cause further reticulation problems if not properly controlled. Even when the pH is above 7,0 (alkaline), water can be strongly corrosive.

Keeping corrosion of a domestic water supply under control requires the control of both pH and alkalinity. If not properly controlled, corrosion or excessive scale (CaCO<sub>3</sub>) build-up occurs. A number of applications of Stability pH (pHs) exist: Langelier Saturation Index, Ryznar Stability Index and the Corrosivity Ratio.

Control of chemical stability: Soft waters (e.g. those in the Southern and Eastern coastal areas of the Republic) are corrosive and it is important that the purification process should include steps for stabilizing the water chemically by treatment with Ca(OH)<sub>2</sub> and CO<sub>2</sub>.

The letter is misleading and any students, trainee operators, reading it will be misin-

formed as to the correct procedures for remedying corrosive water in reticulation systems.

**RA Rowswell, Grahamstown**

**Costs of attending conferences sky high**

Working on my own, and having a lot to offer and more to learn in the water sector, I am keen to attend conferences and the like and to share and experience thoughts.

I have, however, come to the conclusion that it would be extremely difficult to do so. If one should, for instance, think of attending the very interesting and informative (hopefully!) Africa Water Congress in November 2008 that you advertised in *the Water Wheel* (September/October 2008 edition) it is expected that one pays from R5 000 for one of the two master classes to R20 600 for the three-day conference and two master classes! The conference alone will be a hefty R14 000 – all without lodging!

If one should furthermore have to travel from somewhere in Africa to South Africa, one's transport will have to be added to the fee.

All the above will make attendance to the conference – in a developing Africa for persons trying to enlighten themselves to what is ticking in the water industry nigh impossible. Must we not climb off or stop chasing the money spinning conference circuit and instead concentrate on trying to give back to the industry and persons practicing their intellectual value and plough back expertise and learning at true affordable cost?

Thank you for a very informative magazine!

**Hannes Buckle, specialist consultant, Weltevredenpark**

**Much more than you think**

The 'Sanitation by numbers' section on page 7 of the *Sanitation Supplement to the Water Wheel* Vol 7(5) refers. I would like to draw your attention to the first point where you state that a gram of faeces can contain 1 000 protozoan cysts and 100 worm eggs. This is a gross underestimate – by several orders of magnitude. My lab often records 40 000 or more cysts (we seldom even try to count them) and 100 000 eggs (sometimes more) in a gram!

**Chris Appleton, UKZN, Durban**

## Looking for Pumping Solutions?



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## SA water still cheap despite tariff increases

Despite being a water-scarce country, South Africa's water is still among the cheapest in the world, according to the latest international water report and cost survey by the NUS Consulting Group.

Among the 14 countries surveyed, only the US's water proved less expensive. This, despite the fact that South Africans are paying about 70% more for water than five years ago and about 9% more for water than a year ago. Germany claims top honours as the most expensive surveyed country in terms of water. It is generally thought that higher prices will make the consuming public more sensitive to water issues thus promoting greater conservation measures.

Interestingly, 11 of the 14 countries showed an increase in pricing. Australia experienced the largest year-on-year increase

in pricing at 18,5% (with South Africa experiencing the fourth-largest increase). Over the past two years, average water rates in Australia have grown by more than 35%. Australia's significant price increase was mainly attributable to prolonged droughts being experienced in the country.

"Given these developments around the world, medium to large business consumers of water can no longer rely on cheap and abundant supplies," reports NUS Co-President Richard Soutanian. "With fleeting opportunities for savings and the reality of ever higher prices, consumers must take an active role when it comes to their water purchases."

To access an abridged version of the survey, Visit: [www.nusconsulting.com/p\\_surveys\\_detail.asp?PRID=58](http://www.nusconsulting.com/p_surveys_detail.asp?PRID=58)

## Valuable lessons captured from national sanitation programme

A new publication, which offers valuable insight into lessons learnt from the National Bucket Replacement Programme, is now available from the Water Information Network South Africa (WIN-SA).

The programme, launched by national government in 2005, was aimed at replacing all the bucket toilets in South Africa. National Treasury allocated R1,8-billion over three financial years (2005 to 2008) for the removal of the bucket toilets. This was one of the largest allocations for any single government infrastructure project yet in South Africa.

A total of 80 water services authorities (WSAs) were involved in the programme and about 300 projects were undertaken to remove the estimated 252 254 buckets in use in seven provinces.

By the end of March 2008, more than 90% of the target number of bucket toilets had been eradicated through the programme. Most of the buckets were replaced by water-borne sanitation systems and some by alternative forms of sanitation, such as ventilated improved pit toilets.

According to the publication, compiled by WIN-SA and the Department of Water

Affairs & Forestry, the bucket eradication strategy had four primary elements: ensuring political support, strengthening national coordination, support to municipalities and risk mitigation (ensuring sustainability of replacement sanitation systems).

Lessons learnt have been categorised into institutional, technical and social lessons learnt. For example, the publication emphasises the importance of political buy-in and participation of the relevant communities. Communication between stakeholders is key.

Political approaches and the creation of expectations at higher levels have a major impact on the sanitation replacement options selected by the communities. "It was not always clear whether the beneficiaries fully understood the consequences of their preferred choices of sanitation system to replace the buckets," the authors point out.

Communities were generally reluctant to accept a lower form of sanitation than flush toilets unless they were confident that undertakings given by the WSAs, provincial or national departments to enhance the level of their services in future will be honoured. In addition, it is important for communities to take ownership of their new sanitation

systems, and the handover of projects and structures to take place as soon as possible after completion.

Some valuable lessons specifically for municipalities are also captured in the publication. To obtain a copy of the publication, *The National Sanitation Bucket Replacement Programme: Lessons Learnt*, contact WIN-SA at Tel: (012) 330-9076; Fax: (012) 4331-2565 or E-mail: [info@win-sa.org.za](mailto:info@win-sa.org.za)



Kathy Eales

## International recognition for municipal water monitoring system

The Department of Water Affairs & Forestry's efforts to improve municipal drinking water quality have been awarded internationally. The department, along with the Institute of Municipal Engineering and Emanti Management have been recognised internationally for the development of an electronic water quality management system (eWQMS) rolled out to all 166 municipal water services authorities in South Africa.

The eWQMS development team was bestowed the International Water Association Global Project Innovation Award in the Operations/Management category in Vienna, Austria earlier this year, after winning the regional awards. The Award recognise excellence and innovation in water engineering projects throughout the world.

Rollout of the open source, Internet-based system started in 2006. Today, around 95% of WSAs provide drinking water data on a monthly basis. Water quality and other

water service information is captured and stored on the central database. This information can then be easily retrieved via the Internet to generate reports, tables and graphs for management review and decision-making processes.

It is reported that the use of the system has contributed significantly to an improved level of awareness of drinking water quality matters, a growing improvement in effective drinking water quality management and a direct improvement in drinking water quality provision across South Africa. In one case, for example, a municipality's compliance to the national drinking water standard increased from 64% to 94% four months after it started using the eWQMS.

In May, Emanti Management also won the National Science and Technology Forum Award for Category E (Innovation developed through a small, medium or micro enterprise) for the eWQMS.

## Another heritage site for SA

One of South Africa's few true inland lakes, Lake Fundudzi, in Limpopo, is to be declared a national heritage site.

Situated in the mountainous area of Tshiavha village, the lake was formed by a landslide thousands of years ago, and plays a special role in the culture and tradition of the Vhavenda people. At present, special permission has to be obtained to visit the sacred lake from the Netshiavha royal family.

Lake Fundudzi is believed to be protected by a python god, who has to be pacified annually with gifts of traditionally brewed beer. According to legend a man who was broken hearted after the loss of his great love, walked into the lake and turned into a python.



The python is the god of fertility in the Venda tradition. Venda maidens still perform the famous Domba python dance to honour this god. It is also believed that there are 'zombies' who live near the lake.

## South African water savers sought

The Department of Water Affairs & Forestry has called for nominations for the 2008 Water Conservation and Water Demand Management Sector Awards.

Nominees are categorised and adjudicated according to the following sectors: agriculture; industry, mining and power; domestic or local government and forestry. Judging criteria include measurable impact, innovation, sustainability, economic benefit for the organisation and capacity building, among others.

The closing date for nominations is 14 November. For more information, visit: [www.dwaf.gov.za](http://www.dwaf.gov.za)

## WATER DIARY

### HYDROINFORMATICS

#### JANUARY 12-16

The IWA International Conference themed 'Science & Information Technologies for Sustainable Management of Aquatic Ecosystems' will be held in Concepcion, Chile. The conference combines the 7<sup>th</sup> Symposium on Ecohydraulics and the 8<sup>th</sup> Conference on Hydroinformatics. Enquiries: HIC 2009 Secretariat; Tel: +65 6356 4727; Fax: +65 6356 7471; E-mail: [hic2009@inmeet.com.sg](mailto:hic2009@inmeet.com.sg); Visit: [www.heic2009.org](http://www.heic2009.org)

### COMMUNICATION

#### FEBRUARY 18-21

The 2<sup>nd</sup> African Science Communication Conference with the theme 'Shaping Africa's Future: Science Communication's Contribution to Science, Technology and Innovation, and the Development of Democracy in Africa' will be held in Gauteng. Enquiries: Ms Maphefo Chauke, project officer, SAASTA, Tel: (012) 392-9300; Fax: (012) 320-7803; E-mail: [maphefo.chauke@saasta.co.za](mailto:maphefo.chauke@saasta.co.za)

### ENVIRONMENT

#### FEBRUARY 23-25

An International Conference on Implementing Environmental Water Allocations with the theme 'Making it Happen' will take place at the Feather Market Convention Centre in Port Elizabeth. Enquiries: The Secretariat (Cilla Taylor Conferences); Tel: (012) 667-3681; E-mail: [confplan@affrica.com](mailto:confplan@affrica.com); Visit: <http://ewa.innercirclestudios.co.za/downloads.html>

### WATER & ENVIRONMENT

#### MARCH 2-4

An International Conference and Exhibition on Water in the Environment (EnviroWater) will be held at the Protea Hotel in Stellenbosch, in the Western Cape. Enquiries: Dr Gunnar O. Sigge; Department of Food Science; University of Stellenbosch; Tel: (021) 808-3581; Fax: (021) 808-3510; E-mail: [sigge@envirowater.de](mailto:sigge@envirowater.de); Visit: [www.envirowater.de](http://www.envirowater.de)

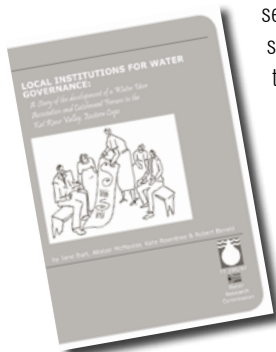
# New from the WRC

**Report No: TT 295/07**

*Local Institutions for Water Governance – A Story of the Development of a Water User Association and Catchment Forum in the Kat River Valley, Eastern Cape (Jane Burt; Alistair McMaster; Kate Rowntree and Robert Berold)*

This A5 booklet describes the development of water resource management organisations in the Kat River Valley from 1997 to 2006. The two organisations described here – the Kat River Valley Water User Association and the Kat River Catchment Forum – are given

separate narratives for the sake of clarity, although they developed in close association. Both these organisations were nurtured and supported as a result of a research process by members of the Catchment Research Group from the Department of Geography at the University of Rhodes with funding coming largely from the WRC.



**Report No: 1673/1/08**

*A Pilot Study into Available Upstream Cleaner Production Technologies for the Petroleum Refining Industry to Meet the Requirements of the Waste Discharge Charge System (HK Mazema; SH Ally; W Kamish and AM Petersen)*

The strategic and critical oil refining industry has undergone considerable economical and political changes. The current trend is towards more stringent environmental quality requirements for all refinery products. This project was initiated out of concern over the financial impact that the Department of Water Affairs & Forestry's new waste discharge charge system may have on industry. The report is divided into two parts, the first which provides an assessment of the cleaner production technologies available to the petroleum refining industry, and the second

which presents a first order assessment of the waste discharge charge system based on the available cleaner production initiatives.

**Report No: KV 211/08**

*Regional Description of the Groundwater Chemistry of the Kruger National Park (RC Leyland and KT Withüser)*

The Kruger National Park has adopted a Strategic Adaptive Management programme with clear ecosystem management goals based on environmental indicators and their thresholds of potential concern (TPC). TPCs are a set of operational goals that together define the spatiotemporal conditions for which the Kruger ecosystem is managed. Groundwater has been recognised as one of the environmental indicators that needs to be monitored and for which TPCs have to be developed in the park. A five-month project led by the University of Pretoria assisted the park to develop a strategic groundwater quality monitoring network and to set the TPC levels correctly and for an appropriate suite of constituents.

**Report No: 1431/1/08**

*To Calibrate and Verify a Predictive Model for the Incidence of Naturally Occurring Hazardous Trace Constituents in Groundwater (H Tarras-Wahlberg; P Wade; H Coetzee; S Chaplin; P Holström; T Lundgren. N van Wyk; G Nitsume; J Venter and K Sami)*

This report presents the findings of a project initiated to calibrate and verify a predictive model for the incidence of naturally-occurring hazardous trace constituents in groundwater. The overall objectives of the project are to provide a basis for the South African authorities to safeguard groundwater consumers from exposure to toxic trace elements, and to determine whether or not leach testing on representative bedrock, or reliable geochemical models can be used to predict natural groundwater contamination in different regions. The trace elements of interest are arsenic, chromium and uranium.

**Report No: 1402/1/08**

*Implementation of a Research Programme for Investigating Endocrine Disrupting Contaminants in South African Water Systems (AEC Burger)*

EDCs research has become of great importance worldwide. It was imperative that South Africa become involved in this field. The EDC research programme was compiled in order to coordinate and extend research done by several groups of researchers in the country. This report presents the EDC research programme pertaining to the investigation of EDCs in South African water systems.

**Report No: TT 356/08**

*Research into UD/VIDP (Urine Diversion Ventilated Improved Double Pit) Toilets: Prevalence and Die-off of Ascaris Ova in Urine Diversion Waste (CA Buckley; KM Foxon; DJ Hawksworth; C Archer; S Pillay; C Appleton; M Smith and N Rodda)*

*Ascaris* is the largest of the common nematode parasites of man. Adult worms can survive for one to two years and female worms can generate eggs for a period of one year while some may continue as long as 20 months. Diagnoses of helminth infection is normally through the detection of the eggs in the faeces. These eggs are highly infectious, and very robust. The present minimum standing period of the urine diversion (UD) toilet vault is one year. In order to ascertain whether this time period is safe for removal and handling of UD solid waste, reliable estimates of the egg load in the waste after a one-year standing period are needed. Therefore this study was undertaken to investigate the natural viability and die-off of *Ascaris* spp. ova in the UD solid waste, using the ammonium bicarbonate (AMBIC) protocol.



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## New book on sustainability science



The CSIR has launched a new book which explores sustainability science from a developing world perspective.

The book is the product of research collaboration between the CSIR and several other South African and international research institutions. Edited by principal scientist Dr Mike Burns and CSIR Research Fellow Dr Alex Weaver, the book proposes a framework for ongoing sustainability science research within the region.

Explaining how the book came about,

Dr Burns argues that science has become isolated from the important aims of practically advancing sustainable development in practice. "Scientists have tended to confine themselves to their own research agendas, avoiding the difficult and value-laden issues of sustainable development that society faces," he says. "At the start of the new millennium, as the implications of unsustainable

development become increasingly apparent, the mode of science practice and, therefore its policy and practical impact, must change."

According to Dr Weaver, the new book is transdisciplinary in the sense that new insights are presented for responding to the challenges of sustainable development resulting from experimentation and the exchange of different disciplinary ideas for promoting sustainable development in southern Africa. Important in this regard has been the inter-

action between philosophers, system modelers, regional and urban planners, political scientists, anthropologists and ecologists.

## Cistern product saves water

Developed and manufactured in Wolseley, in the Western Cape, the Mr Flush Saver is a device that fits into the smallest of cisterns to save water when flushing the toilet.

The product is said to reduce the volume of water in a cistern by 1,1 l. Considering the average number of toilet flushes per household per day is around eight, then the savings per month is about 240 l or 2 800 l/year. This does not include the potential savings for high-volume areas such as hotels, shopping centres, entertainment entities, hospital and factories.

For more information, Tel: (076) 898-0772.

## New, more representative SANCOLD emerges

The South African National Committee on Large Dams (SANCOLD) has adopted a new constitution as part of its present restructuring process.

The new-look SANCOLD aims to be more inclusive, widely embracing and democratically representative of the dam community in South Africa. The committee, which has represented South Africa on the International Commission on Large Dams since 1965, has historically been viewed as an elite organisation, only narrowly representative of the true roleplayers in the industry.

Original members have included engineering-orientated organisations such as the South African Institution of Civil Engineers, the Institute of Municipal Engineers of South Africa, the South African Federation of Civil Engineering Contractors and Consulting Engineers South Africa (formerly the South African Association of Consulting Engineers). Other members include the Department of Water Affairs & Forestry, CSIR, and the South African Universities Vice Chancellors' Association.



Commenting on the restructuring, Dr Paul Roberts, who has been assisting SANCOLD in the process says: "Present water management trends, such as the move towards integrated water resource management as well the 2000 World Commission on Dams Report has emphasised the importance of a broader viewpoint on issues pertaining to dams. While ICOLD and SANCOLD have long paid attention to social and environmental issues related to water projects, there has been a realisation that we

needed to review our whole corporate governance. During this process it was agreed that we needed to broaden our membership base and, at the same time, be more democratically representative of South Africa's dam community."

For the first time, SANCOLD is opening membership to individual members. "We are particularly keen to include corporate and individual members from the earth sciences, as well as the social and environmental sciences," notes Dr Roberts. It is expected that the new membership will improve SANCOLD by bringing forth new ideas, especially from those disciplines which have hitherto not been represented. Individual members will benefit from being able to engage directly with the commission rather than having a more remote corporate representation via a representative body.

The restructuring process is expected to be complete towards the end of 2009. For more information, go to [www.sancold.org.za](http://www.sancold.org.za)

## New programme manager for global sanitation fund

Well known expert in sanitation and pro-poor financing for development, Barry Jackson, has been appointed the first Programme Manager of the Water Supply and Sanitation Collaborative Council's (WSSCC's) new financing mechanism, the Global Sanitation Fund (GSF).

Jackson joined WSSCC in September after 19 years at the Development Bank of Southern Africa where he served in several capacities, most recently as a senior policy analyst specialising in water supply and sanitation policy, municipal infrastructure finance and institutional development. "Barry's long experience in water and sanitation, together with his proven track record in innovative and creative financing which involves public and private actors and serves the poor, will contribute greatly to the success of the GSF," noted WSSCC Executive Director Jon Lane. Launched in March, the GSF is the world's first financing mechanism specifically for sanitation and hygiene. It aims to support national efforts to help large numbers of poor people attain sustainable access to basic sanitation and good hygiene practices. The fund has started work in Madagascar, Nepal and Uganda, Burkina Faso, India, Pakistan and Senegal.

## North America losing fish at alarming rate

Nearly 40% of fish species in North American streams, rivers and lakes are now in jeopardy, according to the most detailed evaluation of the conservation status of freshwater fish in the region in the last 20 years.



The 700 fish now listed represent a 92% increase over the 364 listed as 'imperilled' in the previous 1989 study published by the American Fisheries Society. Researchers classified each of the 700 fishes listed as either vulnerable (230), threatened (190), or endangered (280). In addition, 61 fishes are presumed extinct.

The new report, published in Fisheries, was conducted by a US Geological Survey (USGS)-led team of scientists from the US, Canada and Mexico, who examined the status of continental freshwater and diadromous (those that migrate between rivers and oceans) fish. "Freshwater fish have continued to decline since the late 1970s, with the primary causes being habitat loss, dwindling range and introduction of non-native species," said USGS Director Mark Myers. "In addition, climate change may further affect these fish."

The groups of fish most at risk are the highly valuable salmon and trout of the Pacific Coast and western mountain regions; minnows, suckers and catfishes throughout the continent; darters in the Southeastern US; and pupfish, livebearers, and goodeids, a large, native fish family in Mexico and the Southwestern US. Nearly half of the carp and minnow family and the Percidae (family of darters, perches and their relatives) are in jeopardy.

For more information, visit: <http://fishch.er.usgs.gov/afs/>

## Emerging green economy could create millions of new jobs

Millions of 'green jobs' could be created in the coming decades as a result of the fight against global warming, according to a new study.

The new report, *Green Jobs: Towards Decent Work in a Sustainable Low-Carbon World*, says changing patterns of employment and investment resulting from effort to reduce climate change and its effects are already generating new jobs in many sectors and economies and could create millions more in both developed and developing countries. The report is a joint effort by the United Nations (UN) International Labour Organisation, the UN Environment Programme, the International Trade Union Confederation and the International Organisation of Employers.

Though the report is generally optimistic about the creation of new jobs to address climate change, it also warns that many of these new jobs can be 'dirty, dangerous and difficult'. Sectors of concern, especially but not exclusively in developing countries, include agriculture and recycling where all too often low pay, insecure employment contracts and exposure to health hazardous materials needs to change fast.

Green jobs reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable. The report focuses on green jobs in agriculture, industry, services and administration that contribute to preserving or restoring the quality of the environment.

According to the report, the global market for environmental products and services is projected to double from US\$1 370-billion a year at present to US\$2 740-billion by 2020. Half of this market is in energy efficiency and the balance in sustainable transport, water supply, sanitation and waste management.

Sectors that will be particularly important in terms of their environmental, economic and employment impact are energy supply, particularly renewable energy, buildings and construction, transportation, basic industries, agriculture and forestry. Clean technologies are already the third-largest sector for venture capital after information and biotechnology in the US, while green venture capital in China more than doubled to 19% of total investment in recent years.

For more information on the green job initiative or to download the report, go to [www.ilo.org/integration/greenjobs/index.htm](http://www.ilo.org/integration/greenjobs/index.htm)