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# SAFER SMALL-TOWN WATER

## through step-by- step guide

*A new manual available from the Water Research Commission (WRC) helps municipalities provide better quality drinking water step by step. Lani van Vuuren reports.*

Incidences of disease linked to the supply of poor quality drinking water have been reported in several municipal areas in the last few years. In the latest reported case, at least 30 people died in Bushbuckridge and parts of Mbombela municipality when problems with the local water treatment facility resulted in the provision of poor quality water.

Cases such as these highlight the importance of management of water treatment and supply. For a variety of reasons, this has proven problematic especially for small municipalities situated in far-flung, rural areas. Lack of skilled technical and management personnel along with low financial resources are only some of the challenges experienced by these local and district authorities who have taken on the responsibility of providing water to their constituents.

At the water indaba held in Mpumalanga earlier this year, Minister of Water &

Environmental Affairs Buyelwa Sonjica emphasised the importance of proper management and planning in ensuring a safe, reliable drinking water supply. "It is the responsibility of each water service authority to ensure proper planning, budgeting and management of such infrastructure to prevent service delivery breakdowns and pollution incidents. Sufficient provision must be made for operation and maintenance of existing infrastructure to prevent service delivery failures."

### PLANNING FOR WATER SAFETY

To assist municipalities with these planning and management aspects, the WRC funded the development of a new water safety plan manual – a step-by-step assessment and risk management tool dealing with all aspects of risk, from where the water is taken from the catchment to where it is delivered to the consumer.

"A properly conducted water safety plan would almost certainly have prevented the outbreaks of water-related disease experienced in several small South African towns in recent years," reports WRC Research Manager Dr Jo Burgess. These include Bloemhof, Delmas and Kanana. A water safety plan is basically an organised, structured system to reduce the chance of failure of the water treatment system through oversight or management lapse.

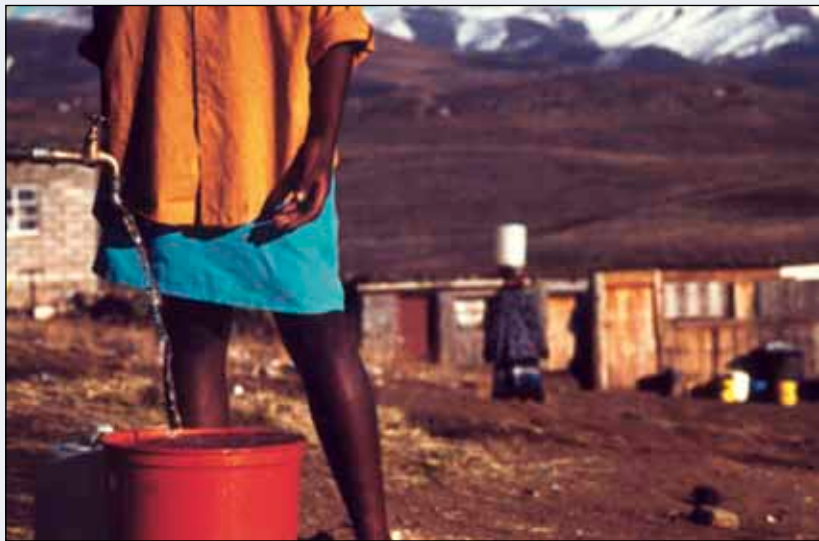
Dr Burgess explains that the key to ensuring clean, safe and reliable drinking water is to understand the drinking water supply from the source all the way to the consumer's tap. "This knowledge includes understanding the general characteristics of the water and the land surrounding the water source, as well as mapping all the real and potential threats to the water quality. These threats can be natural, such as seasonal droughts or flooding, or created by human activity, such as agricultural and industrial practices, or recreational activities in the watershed. Threats can also arise in the treatment plant or distribution system thanks to operational breakdowns or ageing infrastructure."

The water safety plan explained in the WRC manual is built around the so-called 'multi-barrier' approach to ensuring drinking water safety. This approach recognises that while each individual barrier may not be able to completely remove or prevent contamination, and therefore protect public health, several barriers work together to provide assurance that the water will be safe to drink over the long term.

"The multi-barrier approach takes all of the threats into accounts and makes sure there are barriers in place to either eliminate them or minimise their impact. It includes selecting the best available water source (dam, river, borehole) and protecting it from contamination, using effective water treatment. Water quality also needs to be protected from deterioration in the distribution system," notes Dr Burgess.

The water safety plan affords consistency with which safe water is supplied and provides contingency plans to respond to system failures or unforeseeable hazardous events. It guides both day-to-day actions and long-term planning.

Furthermore, the water safety plan will identify crucial aspects that collectively ensure the provision of safe water and aid system managers and operators in gaining a better understanding of the water supply system and the risks that need to be managed. Some of these aspects include regular monitoring and inspections that signal deteriorating water quality (and prompt action);




Gavy Stubbs

*Municipalities need to take the necessary steps to ensure their water meets quality standards.*

regular maintenance; guidance for improvement and expenditure; additional training and capacity building initiatives; and a list of where to get help, who needs to know details of water quality and how quickly they need to know.

Importantly, once set up such a plan has to be reviewed at least once a year to ensure it meets all the necessary criteria, Dr Burgess points out. "These reviews should assess operational monitoring results and trends. It is also important to include local operators and/or site visits in these review meetings. In addition to the regular planned review, the water safety plan should also be reviewed when, for example, a new water source

is developed, major treatment improvements are planned and brought into use, or following a water quality incident."

To order the manual, *The Development of a Generic Water Supply Plan for Small Community Water Supply (WRC Report No: TT 415/09)*, contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; Email: [orders@wrc.org.za](mailto:orders@wrc.org.za) or Visit: [www.wrc.org.za](http://www.wrc.org.za) to download an electronic copy. 

## THE STEPS OF A WATER SAFETY PLAN (WSP)

- ✓ Assemble the WSP team.
- ✓ Describe the water supply system.
- ✓ Identify hazards and hazardous events and assess the risks.
- ✓ Determine and validate control measures, reassess and prioritise the risks.
- ✓ Develop, implement and maintain an improvement/upgrade plan.
- ✓ Define monitoring of the control measures.
- ✓ Verify the effectiveness of the WSP.
- ✓ Prepare management procedures.
- ✓ Develop supporting programmes.
- ✓ Plan and carry out periodic review of the WSP.
- ✓ Revise the WSP following an incident.

