

CT water source under threat

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Cape Town - The Cape Flats aquifer, which has the potential to supply Cape Town with billions of litres of fresh water a year, is under growing threat from chemical pollution, say experts.

The chemicals, among others, which have found their way down into the water-bearing rock, include nitrates from human waste, cyanide from industry, and pesticides sprayed by local farmers.

Covering about 630 square kilometres, the aquifer lies under the coastal sands that stretch from the Cape Peninsula to the inland mountains.

According to a scientific paper - titled *Contamination and Protection of the Cape Flats Aquifer, South Africa* - the giant aquifer has the potential, if tapped sustainably, to supply more than two-thirds of the Mother City's basic water needs.

"The sustainable use of the Cape Flats aquifer... is estimated at 18 billion litres per year, a figure that excludes possible developments unlikely to be economically viable.

"This implies that more than two-thirds of the basic water needs of the population in the greater Cape Town area (the paper pegs this at nearly three million people) can be met by the Cape Flats aquifer," it says.

Written by University of the Western Cape researchers Segun Adelana and Yongxin Xu, the paper is contained in a recent United Nations Environment Programme publication, "Groundwater Pollution in Africa".

It warns while the quality of the groundwater of the Cape Flats aquifer is generally good, it is starting to show "measurable impacts from human activities".

Protection zones

Further, it calls for appropriate aquifer "protection zones" to be put in place.

Currently, most of Cape Town's water supply is obtained from surface water, stored inland in big dams and reservoirs, including those at Theewaterskloof, Voelvlei and Steenbras.

After recent water shortages and droughts, hydrologists in the Western Cape have turned their attention to the province's aquifers as a means of keeping the fast-growing region assured of a reliable and sustainable water supply.

Adelana and Xu say their study shows urban development - well known to have a negative impact on groundwater quality - is taking place over many parts of the Cape Flats aquifer.

The threats from this are:

- low-to-medium risk pollution sources, which occur in large areas of the Cape Flats. These include low-income residential areas such as Guguletu and Khayelitsha, as well as the Philippi farming areas; and,
- so-called "nodal sources" of pollution, including waste water treatment works and numerous waste disposal sites.

"Physico-chemical analysis of groundwater in the study area revealed high levels of nitrates, chlorides, phosphates and, locally, fluoride."

The paper also notes the provision of adequate sanitation to the numerous people living in informal settlements on the Cape Flats "is prominent and fundamental to public health".

Within the Cape Town municipality, sources of contamination include cemeteries, stormwater and wastewater systems.

"Other significant sources... around Cape Town are from leakage of underground petrol and diesel storage tanks, nutrients and pathogens in human waste (eg nitrate, phosphate and potassium), cyanide and trichloroethylene from metal plates, chemicals used for cleaning, and agro-chemicals (fertilisers and pesticides)."

The paper calls for groundwater protection zones to be set up across the Cape Flats.