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Soekor boreholes still exhale gas

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SMOKE ON THE WATER: Karoo farmer Boetie Botes, second from right, with farmers from the Merweville district who struck a match over water flowing out of one of Soekor's old boreholes, and flames danced over the water. Photo:Gerrit Van Tonder

by: Melanie Gosling, Environment Writer

WHEN Soekor drilled for oil in the Karoo in the mid-1960s, they left many deep boreholes behind.

Last week a farmer near Merweville opened one of these old boreholes. Gas flowed out and then water as "salty as the sea". There was so much gas he struck a match and the water "caught alight".

University of Free State's Professor Gerrit van Tonder says this proves what he has been saying all along: that the underground water in parts of the Karoo flows upwards, and if fracking goes ahead, salty underground water, with toxic fracking fluids, methane and other harmful substances released from deep geological formations, will flow upwards to contaminate the fresh underground water nearer the surface. This is the water farmers and Karoo towns rely on for much of their water supply.

"This proves my model. Hyrdaulic fracturing in the Karoo will inevitably result in pollution of groundwater," Van Tonder said.

Van Tonder, a geohydrologist, initially did not see fracking as a potential hazard to underground water. However, when he and colleague Fanie de Lange investigated further last year, they changed their view.

Van Tonder believed if he could find one of the old Soekor boreholes, some of which were drilled deeper than a kilometre, he would be able to test his model.

“I wanted to find a Soekor borehole that was still open so I could do tests and said so on a radio programme. A farmer heard the talk and contacted me.”

The farmer, Boetie Botes, told the Cape Times Soekor had drilled the borehole in 1965 when his father ran the farm.

Soekor was looking for oil and drilled to about 11 000ft. They found no oil, but some methane gas and warm, salty water from deep underground.

Soekor closed the borehole and put a tap on it for the farmer. However, because it was so salty, they never used it.

“That tap was closed for over 40 years and it was rusted. You can’t let it flow out because it will kill all the vegetation because it is as salty as seawater.

“When I heard Professor van Tonder saying he wanted an open borehole I phoned him. My neighbour and I put some oil on the tap and we got it open again. At first gas came out and then, after about three quarters of an hour, water came out, but gas with it. We lit it and it burnt,” Botes said.

Van Tonder says the Karoo Basin is under pressure from the overlying rock formations.

In places it acts like an artesian aquifer – an underground layer which holds groundwater under pressure.

The Karoo has unique geology, with underground dolerite dykes and sills which create pathways for this water under pressure to flow upwards. Other regions do not have this. All the hot springs in the Karoo are associated with these dykes. About 80 percent of the holes that Soekor drilled in the Karoo hit dolerite dykes.

Van Tonder says once the fracking boreholes are closed, the pressure in the fracked areas will rise again, and the underground water will flow upwards to the fresh underground water, carrying pollutants with it. Many of the fracking fluids are toxic. Several chemicals include those that are known to cause cancer, such as benzene, which is a human carcinogen in water at levels greater than five parts per billion.

Although fracking companies point out that chemicals make up only around 0.5 percent to 2 percent of the total volume of water used, experts say because many millions of litres of water are used, the amount of chemicals is large.

For example in the US, a four-million gallon (15 million litre) operation could use 80 to 330 tons of chemicals.

Van Tonder has taken samples of the water from the Soekor borehole and from other boreholes nearby.

He said all the fracking boreholes would leak given enough time – “that is a given”.

“They can only take out about 20 percent of the methane because of technical issues. About 80 percent of the methane will still be there and the water and methane will flow upwards. There is no way to determine where pollutants might enter fresh water aquifers. Once a source has been polluted it could take some time before the problem is identified. In a water-scarce Karoo this could lead to whole communities left without a fresh-water resource,” Van Tonder said.

Botes said that what worried him was that if contamination occurred, there would not be anyone who could be held accountable.

“The big companies will hire other people to do the drilling work, then another group for the recovery of gas and so on. If there are problems later, Peter will blame Paul who will blame John who says: ‘It’s not my problem’. In the end no-one will take responsibility,” Botes said.