



DOMESTIC WATER FILTERS: ARE THEY NECESSARY IN SA?

An increasing number of consumers are installing domestic water filters at home but scientists say South Africa's tap water is top quality

Viktor Schauberger, the Austrian forester who invented the technology to transport logs in water sluices, is quoted as saying that one day a good bottle of water would cost more than a good bottle of wine.

Schauberger worked in the ancient forests of Europe in the first half of the 20th century and, despite the apparent timelessness of this environment, he recognised water was being indiscriminately polluted. Today a "good bottle of water" is still within reach of the ordinary man's pocket but Schauberger makes a strong point – will clean drinking water eventually be so rare that it costs more than other bottled drinks?

CHEMICALS

The question an increasing number of consumers want answered is whether or not chemicals, like chlorine, added to water at municipal treatment facilities to produce potable water are helping or harming our health?

Is it safe to drink tap water or should we all install a domestic water filter in our home to remove the cancer-causing THMs present in chlorinated water?

THMs, by the way, stands for trihalomethanes which is a class of chemical compounds that occur when chlorine combines with organic matter in water.

All water that comes through municipal treatment plants have THMs present – chlorine is added as part of the disinfection process to kill the bacteria, viruses and parasites that cause water-borne diseases like cholera, gastro-enteritis, typhoid and dysentery.

Sue Freese, senior scientist: research and development for Umgeni Water in KwaZulu Natal says she drinks tap water, especially in the major urban centres, without hesitation.

"A non-smoker probably stands about a one in four chance of contracting cancer – the THMs in purified water are not going to make a difference."

Freese says these THMs increase the risk of cancer by only a fraction of a percent.

"You could say then that your chance of cancer increases to 3,9 (recurring)%. There is no documented proof that chlorinated

water causes cancer." (Freese has made the point that the figures she is quoting are by way of example and are unsubstantiated). Much worse is smoking which doubles the risk of cancer.

"THMs are more of a health hazard when inhaled than when ingested from the water we drink," she says. Without chlorine in water the risk of dying from a water-borne disease is high. Freese quotes an example from Peru where, in the 1990s, officials were so afraid THMs would cause cancer that they stopped chlorinating water in some areas. "Within weeks 4 000 people were dead from water-borne diseases."

WATER PURIFIER

Lyndal Diedericks, marketing representative for EVA Water Purifiers promoted and used by the holistic health company Nature's Technologies, only drinks water that comes through a domestic water purifier. She became interested in purifying tap water after her mother discovered higher than normal traces of lead in her blood caused by old plumbing in their Pretoria home. "I grew up on tap water but now that I understand the technology behind domestic water purifiers and

how they improve water I won't drink anything else."

Diedericks explains how, in the EVA filter, the water first passes through a ceramic filter that traps bacteria and parasites, after this a sterilising agent, built into the carbon filter, prevents water from re-polluting. Silica sand removes acidic components, while magnets ensure the water retains the free moving molecules of mineral spring water. Mineral stones impart 45 minerals into the water including germanium which improves the oxygen level in the water and is anti-carcinogenic. Silver activated carbon removes chlorine, organic chemicals and THMs while Zeolite removes heavy metals like lead and mercury. Mineral sand adjusts the pH of the water and finally silver impregnated coral stones ensure the water in the storage tank stays fresh for a reasonable time.

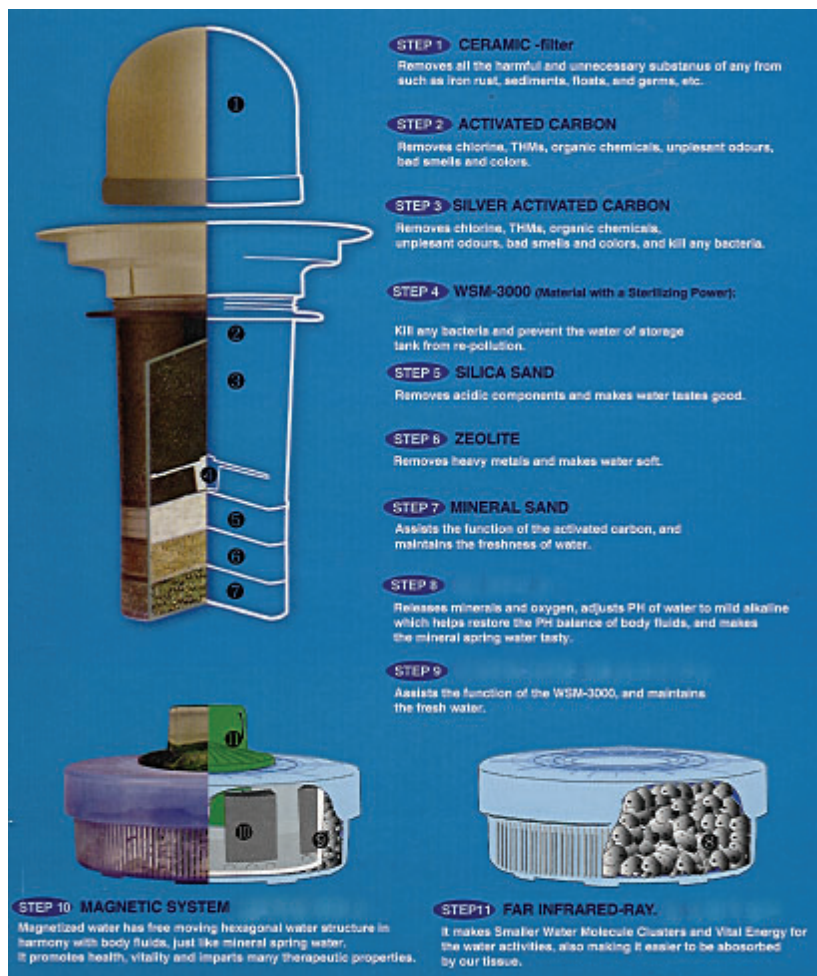
"At a demonstration in Sandton recently I was shocked to see how much chlorine had accumulated in the filter by the end of the presentation.

"It can't possibly be good for one to drink all those chemicals never mind the awful taste."

The non-chemical taste of domestically purified water is what keeps Diedericks, and most other domestic-water purifier users, coming back for more.

Sue Freese is not anti domestic water purifiers but, she points out, consumers should not be taken in by persuasive salesmen who don't have the scientific knowledge to explain how the product they are selling works.

"Many of these water filters need ongoing maintenance," she says, "if the filters are not properly and regularly cleaned bacteria accumu-



The construction of a modern domestic water filter.

late and contaminate the water coming through the filter." This means that the tap water going into the filter can be safer than the water coming out of it."

RAND WATER

Rand Water's Manager of Process Technology John Geldenhuys was commissioned by the Water Research Commission three years ago to investigate the feasibility and safety of domestic water purifiers. His conclusion was that water quality in South Africa's major urban centres is of the best in the world and does not need extra filtration. "Where I would consider using a filter is in some smaller communities where municipal water treat-

ment is not up to standard." Take the case of one rural municipality where a dead baboon was found floating in the reservoir.

Geldenhuys says buying an off-the-shelf domestic water filter is a risk. "Before spending money on a product find out about the water in your area and then find a suitable purifier. Also a consumer must understand how to keep the purifier properly maintained and clean."

ACTIVATED CARBON

He explains that most domestic water purifiers contain activated carbon that absorbs organic compounds improving the taste and smell of water. However, the acti-

vated carbon also neutralises the chlorine that kills bacteria, viruses and parasites.

“Activated carbon has a porous structure that allows it to harbour micro-organisms but, when it becomes saturated, these harmful compounds are released back into the water.”

In one test, conducted by researchers for the WRC report, an office domestic water purifier, left to stand over a weekend, had to be flushed 10 times before the water was considered safe to drink. Sometimes the organic compounds absorbed by the activated carbon are displaced by other compounds that are more easily absorbed. “This means high concentrations of these compounds can be released back into the water without warning,” says Geldenhuys, “and some of them could be dangerous.”

Information made available to the Water Research Commission indicate that domestic water purifiers are being marketed aggressively in old age homes where salesmen promise the purified water can cure a range of ailments.

In a letter to the WRC Mr HP Beyers, a retired analytical chemist living in the Kokanje Retirement Resort near Modimolle (formerly Nylstroom) in the Limpopo Province wrote that he was concerned that “unscrupulous salesmen” promoting domestic water purifiers were targeting the elderly living in old age homes and retirement villages.

“I live in a retirement resort with about 800 elderly residents who because of their age invariably suffer from some malady. As a result, in desperation, some who attempt to find a cure become victims of these fortune seekers.”

Geldenhuys’ research made it clear: “Given that large water suppliers meet all accepted health criteria for water for domestic consumption and that the small amount of activated charcoal used in most home treatment devices is subject to saturation and breakthrough the shelf-life of these devices render

Domestic water purifiers are being marketed aggressively in old age homes where salesmen promise the purified water can cure a range of ailments

them little more useful than placebo for the unduly concerned.” Lyndal Diedericks, spokesman from EVA, says it’s wise for consumers to do their homework and understand the technicalities of a domestic water filter before making a purchase.

“We are selling a holistic, healthy way of living and find that the EVA purifier is the right product for what we want to achieve.”

CLEAN WATER

For the public, confused as to what is best for one’s health, it is worth looking at history to see how mankind has overcome the problem of sourcing clean drinking water. First were the Ancient Egyptians who developed an apparatus to remove solids suspended in the drinking water from the Nile. Nearly 1 000 years later, in 500 BC, Hippocrates, the father of modern medicine, realising something in water was making his patients ill, invented the Hippocrates Sleeve to strain rainwater for drinking. Not long afterwards the Romans began developing aqueducts to supply their homes with water and, by 300 BC, the Greeks, Romans and Egyptians were using large settling cis-

terns to remove sedimentation from their water.

In the Dark Ages there was little scientific exploration and water purification was not considered a priority – as a result water-borne disease killed millions.

It was 200 years after Anton van Leeuwenhoek invented the microscope (in 1680) and Lu Antonio Porzio invented a multiple level water filter (1685) that scientists eventually put the two together and realised there was a link between what they were seeing under the microscope, water and health. Nevertheless by then Parisian Joseph Amy had already patented the first domestic water filter (1746) – a contraption made of sponge, charcoal and wood. Scottish factory owner John Gibb was the first person to develop a system to supply water to a whole town. He needed filtered water for his bleachery in Paisley and, within three years, his system was being used to pipe water to customers in the industrial centre of Glasgow. Modern water purification is a sophisticated science developed to protect the health of the entire population. While chemicals which can be deadly at high concentrations are added to water to kill germs, it is in carefully calculated doses that will not interfere with the general health of its users.

However, as Geldenhuys has said, in small communities where the local water treatment practises are possibly not up to standard, additional treatment could be appropriate. His conclusion is that generally water in this country complies with the South African National Standards (SANS) O241 specification and does not need additional purification. Cheers to the fact that in South Africa a good bottle of (tap) water is still cheaper than a bottle of wine! 