



## A drop in the bucket

16 Mar 2015

*Author: Victoria Tait*

*Photography: Provided by SkyJuice*

*Video:*

Twenty years ago, Rhett Butler saw many children in developing regions drinking polluted water. As a result, he developed a unique solution that led to the formation of Skyjuice, an organisation that uses Australian technology to provide world-class safe, potable water to remote, low-income communities for as little as 20 cents per person, per annum.

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Few people remember what kept them up at night 25 years ago but mechanical engineer and Skyjuice founder Rhett Butler does.

“Guilt,” he says simply.

At the time, he worked for an Australian company called Memcor, which designs, manufactures, and installs world-class water-treatment technology. About 95 per cent of Memcor's sales were exports so Butler travelled extensively throughout developing countries introducing the company's water treatment solutions.

However, his travels left him unsettled. He saw too many children swimming in polluted streams and drinking polluted water.

“I'd be thinking, 'We've got the best water technology in the world. This Australian technology we've developed really should be made available for drinking water, not just purely industrial purposes,'” Butler says.

Then the anxiety kicked in. Butler started waking up in the middle of the night, distressed by what he'd witnessed.

“Something inside of me was saying, 'You've seen all these problems but you're not doing anything about it. Are you going to wait until you've retired or are you going to use the energy you've got now while you're young?' So I told my wife I was going to quit my job and do something about this problem, and she said, 'You should do it'.”

Butler approached Memcor, which by then was owned by German multinational Siemens, for support.

“I said, 'Could you give me all your offcuts so they could be utilised for a simple low cost water filter?' They agreed, so I set up my own little manufacturing facility in my garage,” he says.

Butler's early efforts in water innovation eventually led him to found Skyjuice, a not-for-profit company which supplies low-cost, world-class drinking water to remote communities in developing countries.

Skyjuice uses the technology Butler developed in his garage, an ultrafiltration membrane made up of thousands of microporous hollow fibres based on the filtration system used at treatment plants in major cities. The membrane is inserted into a novel housing design, providing potable water via filtration without the use of chemicals. However, the big breakthrough developed by Butler was housing the system in a unit powered only by gravity.

“We’ve got a number of different versions of the unit but essentially it’s the same gravity-driven membrane filter,” Butler says of the community-based system.

“The volunteers and incredible team at SkyJuice have driven the innovation into exciting new directions.”

“Our premise is simple, it must be simple to operate, it doesn’t use any energy or pumps, so it’s sustainable. We’re not supplying something to communities where they’re getting burdened with the ongoing cost of paying for diesel or batteries or maintenance or spare parts.”

And it’s affordable. One unit costs about A\$2500 and provides 20 litres of safe drinking water per person per day for between 2000 and 5000 people for 10 years.

“If you look at it on an amortised basis, let’s be very conservative and say, there are 2500 people, and it costs A\$2500, that’s only \$1 per person for 10 years. This is an extremely compelling proposition.

Skyjuice was incorporated in Australia in 2005 and has supplied about 2500 installations since then to 53 countries across Africa, Asia and the Pacific, the Middle East and Central and South America.

The company has provided access to clean water on Siargao Island in the Philippines, provision of a water purification unit, hand wash facilities and education programs for two schools in Delhi, India and prefabricated SkyJuice kiosks across multiple Kenyan villages.

At a local level, Skyjuice and its partners on the ground sit down with the mayor or chief or local council to see what they can develop together.

“They must tell you what they need. It’s got to be their decision to participate,” Butler says, adding the mayor or community leader’s involvement is critical to the process of obtaining local permits.

The community leader decides who will operate the stand-alone Skyjuice potable water filter unit and where it will be located - usually in a market or school or hospital. In addition, Skyjuice also supplies community operated ‘Safe Water Kiosks’, which are the size of a 20-foot shipping container. They can be quickly constructed, rapidly providing community benefit.

“You’re ticking all the boxes in terms of serving a community,” he adds.

“Even though we feel we have the world’s greatest mousetrap in terms of clean, safe, affordable water, 90 per cent of what we do is social interface with communities – making sure we understand all the social and political issues to get a solution,” he adds.

Without the guilt that kept Butler awake at night, Skyjuice and its 2500 units worldwide would not exist but he is determined to do more.

“We’ve only supplied 2500 to 3000 units. We should be doing 2500 to 3000 every week,” he says.

Butler says Skyjuice is in the business of working with people, not selling water filters, so it looks for strong partners on the ground. He cites Latin America as an example.

“In Colombia, the local water utility, Empresas Públicas de Medellín (EPM) has a very strong sense of corporate responsibility. They provide three or four full-time people who go around and install our filters in all the schools. They’ve rolled out hundreds of them and they are a full-blown commercial organisation. They’re not doing it as a one-off,” he says.

Social change in Latin America requires a business partnership in which stakeholders work together to find effective solutions, rather than going cap in hand to a potential corporate donor. Butler says the Skyjuice partner in Colombia excels at building business partnerships.

“Last year, we shipped one container with 328 Skyhydrants and they gobbled them all up in 15 months.

“We think that's a great story and we'd like to do that in many other countries in Latin America as well. We think the potential is huge,” he notes.

In 2012, Butler was made a member of the Order of Australia for his work in providing potable water units throughout the world. However, asked about Skyjuice milestones, his pride in contributing to the landscape of Australian innovation overtakes any personal recognition.

“What we're pretty proud of is we've got Australian technology; Australians have demonstrated we can solve global problems. The core membrane is still made in Australia. It's an Australian design and innovation and all manufactured in western Sydney.”

“It doesn't have to be a high-tech approach. Something as simple as a low-cost membrane can be deployed and kids can have clean water. They can have clean water in their milk products,” he says of the powdered milk often used in developing economies.

Asked whether he still putters in his garage, Butler casually replies that he does. In fact he has come up with a new prototype with the help of his SkyJuice members.

“We're going to launch a new model on World Water Day on the 21 March. It's a mini-SkyHYDRANT that we call the GEM,” Butler says.

“We've taken the standard design and made it smaller – now that sounds easy but it's not – and we've come up with a kit that can be used for all emergency and disaster groups around the world,” he adds.

The SkyHydrantGEM weighs 15 kilograms, so an emergency person responding to a bushfire or tsunami can carry a unit in a kit, the membrane filter can come out, and the unit can provide drinking water immediately.

“As long as you have access to a water source, you can treat the water and provide safe drinking water for the medical team and other emergency workers and victims,” Butler says.

How does he keep coming up with ways to help humanity?

Butler credits his Australian education, having earned three Master's degrees – Science, Engineering and Business Administration – in Australia. Today, he is an Associate Professor of Engineering and part-time lecturer at the University of Sydney.

However, he equally credits Australia's innovative approach to problem-solving.

“I'm a firm believer that Australia has a lot of good ideas. If you look at innovations around the world, a lot of them, whether it's the internet, black-box recorders or lawnmowers or anything, they're all invented by Australians,” Butler says.

He says the developing world and the potential to alleviate poverty is a huge opportunity for Australians. Applying the traditional innovative, can-do attitude to the growing pressures on food, water and shelter in an increasingly congested world makes common sense, even business sense, according to Butler.

“If we look at the great opportunities, whether it be low-cost housing or low-cost lighting or low-cost, safe water in developing countries, Australians have a huge potential to do good in the world. There are huge opportunities for budding social entrepreneurs.”

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