

Pure and simple

With its superior technology and affordability, Tata Swach promises clean drinking water to millions of Indian families

We forget that the water cycle and the life cycle are one," said noted French oceanographer, explorer and environmentalist Jacques Cousteau. Humankind, through negligence, has dissipated earth's water resources.

According to a 2006-07 UN report on the status of sanitation and health in developing nations, half the world's hospital admissions, at any given time, are for water-borne diseases. In India, death by water-borne diseases is more than 1.5 times the deaths caused by Aids and twice as many as caused by road accidents. Nearly 400,000 children below the age of five die annually on account of diarrhoea.

The root of the problem lies in the lack of safe drinking water. In India, 85 per cent of people in small towns and villages do not drink purified water. Almost 70 per cent use the same water for drinking, bathing, washing clothes, bathing cattle, etc. The lack of awareness, the nonchalance towards health issues and the high cost of water purifiers compound the problem.

Health in a cartridge

Enter a solution, Tata Swach, a water purifier. This joint effort of the Tata Chemicals Innovation Centre (IC) and the Tata Research Development and Design Centre (TRDDC) promises to make clean water available to all. Tata Swach requires neither electricity, nor boiling, nor running water to operate, is high-performing, user-friendly and affordable.

Tata Swach runs on TSRF™ technology that uses rice husk ash (RHA), a widely available natural waste, as the base, with nano-silver particles bound onto it. An

intelligent mechanism adjusts the direction of flow and the flow rate, and modulates the surface area of contact and the actual contact time.

The precursor to Tata Swach took shape in TRDDC in the 1980s when professor PC Kapoor and his team worked on Sujal, a rudimentary water purifier concept that Mr Kapoor brought from IIT Kanpur. The team developed Sujal using RHA, pebbles and cement. It became an important corporate sustainability (CS) initiative of Tata Consultancy Services (TCS) and 250,000 Sujals were distributed through NGOs between 2000 and 2003, including 25,000 distributed in southern India after the devastating tsunami of 2004.

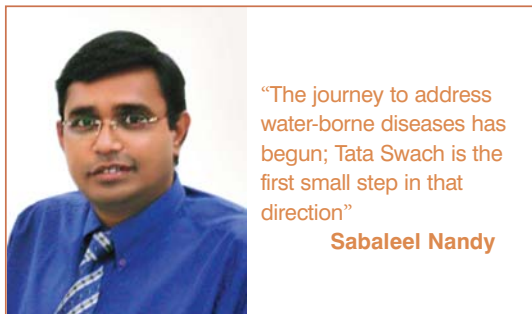
However, given the complex fabrication process, Sujal was not suitable for commercialisation and, with a purification capability of 85 per cent, it did not guarantee freedom from water-borne diseases.

The project was revived in 2006 when R Gopalakrishnan, vice chairman Tata Chemicals and executive director, Tata Sons, visited TRDDC. Mr Gopalakrishnan realised that Sujal had the potential to emerge as a fast-moving consumer durable. Since drinking water was a national priority and water purifiers had little penetration in the country, he suggested that the newly formed IC provide technical inputs to the project.

Mr Gopalakrishnan believed that Tata Chemicals, with its experience of establishing the iodised salt market in India to counter the incidence of goitre, was primed to evolve a solution to this problem. At TRDDC, Prof Mathai Joseph, the then EVP, TCS and ED, TRDDC, reconstituted the team and Project WaPu (water purifier) was born.

Through fire and water

Sabaleel Nandy, head, water purifier business at Tata Chemicals, says, "During one of the first meetings of the WaPu team, the senior management threw a unique challenge at us: Could we do for drinking water what Thomas Edison did for lighting through his electric bulb?" The team was asked to create a bulb-like water purifier, which could be fixed on any water storage vessel. It would produce potable water without electricity, which is often unavailable in rural India. A two-pronged target was set: high performance (100 per cent bacteria



"The journey to address water-borne diseases has begun; Tata Swach is the first small step in that direction"

Sabaleel Nandy



Tata Sons Chairman Ratan Tata (third from right) dedicating Tata Swach to the nation along with (from left) R Mukundan, MD, TCL; Kapil Mehan, ED, TCL; PK Ghose, ED and CFO, TCL; S Ramadorai, vice chairman, TCS and R Gopalakrishnan, ED, Tata Sons

removal from drinking water) and high convenience (this was important since the target customers were not used to any methods of water purification).

The team studied the standards set by the UN, the WHO and the US Environmental Protection Agency. They also studied existing water purifiers through certifications and the test reports of laboratories.

Numerous trials and experiments followed. With the teams working together, a breakthrough was achieved. It was now time to think of commercialisation. Mr Nandy adds, "While R&D is extremely important, a product also depends on a host of other factors for success. You have to be able to mass produce the product. You need to understand what the consumer wants and what features are necessary, have the right product design, set price targets and understand what the competition is doing." Soon the WaPu team had engineers, plastic technicians, chemists and marketers from different Tata companies, working together. Emphasis was on understanding customer needs and making the product easy to use and maintain.

However, Tata Chemicals soon realised that mass production would not be easy. "There was no off-the-shelf production process or machine available to mass manufacture the WaPu," says Mr Nandy. After several attempts involving in-house engineering expertise within Tata Chemicals and crucial external assistance from Titan Industries, the cartridge manufacturing facility at Haldia, West Bengal, was set up.

A larger-than-life cause

Tata Swach has been successfully tested at various laboratories, including CFTRI, Mysore; Haffkeine, Serum Institute and Intertek Labs, all in Mumbai; VIMTAS, Hyderabad; IADFAC, Bangalore; KEM Hospital, Pune;

Vitens, Netherlands; and RD Analyticals, Microtech Services and AES, all in the UK. The product also underwent live testing in over 500 households in Barabanki, Uttar Pradesh; Dindigul, Tamil Nadu; Khurda, Orissa and Akola, Maharashtra for a six-month period. These product placements met with a great response.

Like an electric bulb, the cartridge can be purchased from a grocery store for Rs299 and has a life of over 3,000 litres. It lasts for six months for a family of five, costing less than a

rupee per day per family. It can be bought in a do-it-yourself format and fixed on to any existing water storage vessel. The factory-made, plastic, vessel-over-vessel format costs Rs749 or Rs999.

Another innovation, the Tata Swach Fuse, indicates the capacity remaining in the cartridge, giving householders time to buy a replacement, and automatically shuts it off once the purifying admixture is exhausted. The joint teams of Tata Chemicals and TRDDC have filed for 14 patents covering various aspects of this innovation.

Now, the task at hand is to make Swach available to consumers. Tata Chemicals now faces the challenge of raising awareness about the importance of clean water through the use of mass media as well as road shows at the grass-roots level. "Our effort will be directed at several stakeholders involved in the purchase process," says Mr Nandy. "The water purification market is huge and under-penetrated. We need to make Tata Swach available everywhere, from white goods outlets to *kirana* stores."

Once Tata Swach succeeds in its clean revolution, it will ensure tremendous growth. India is not the only country that suffers from a lack of clean drinking water. But Tata Chemicals would like to achieve a real transformation in the country before venturing overseas.

For the research team, the quest continues. There are other kinds of water problems, such as making saline water potable or removing arsenic or fluoride, which would require other technologies.

"The journey to address water-borne diseases has begun; Tata Swach is the first small step," says Mr Nandy. Thanks to Tata Swach, pure drinking water is within the reach of vast sections of India's population deprived of this most basic human right. The water cycle can now coexist with the life cycle. ●

Cynthia Rodrigues