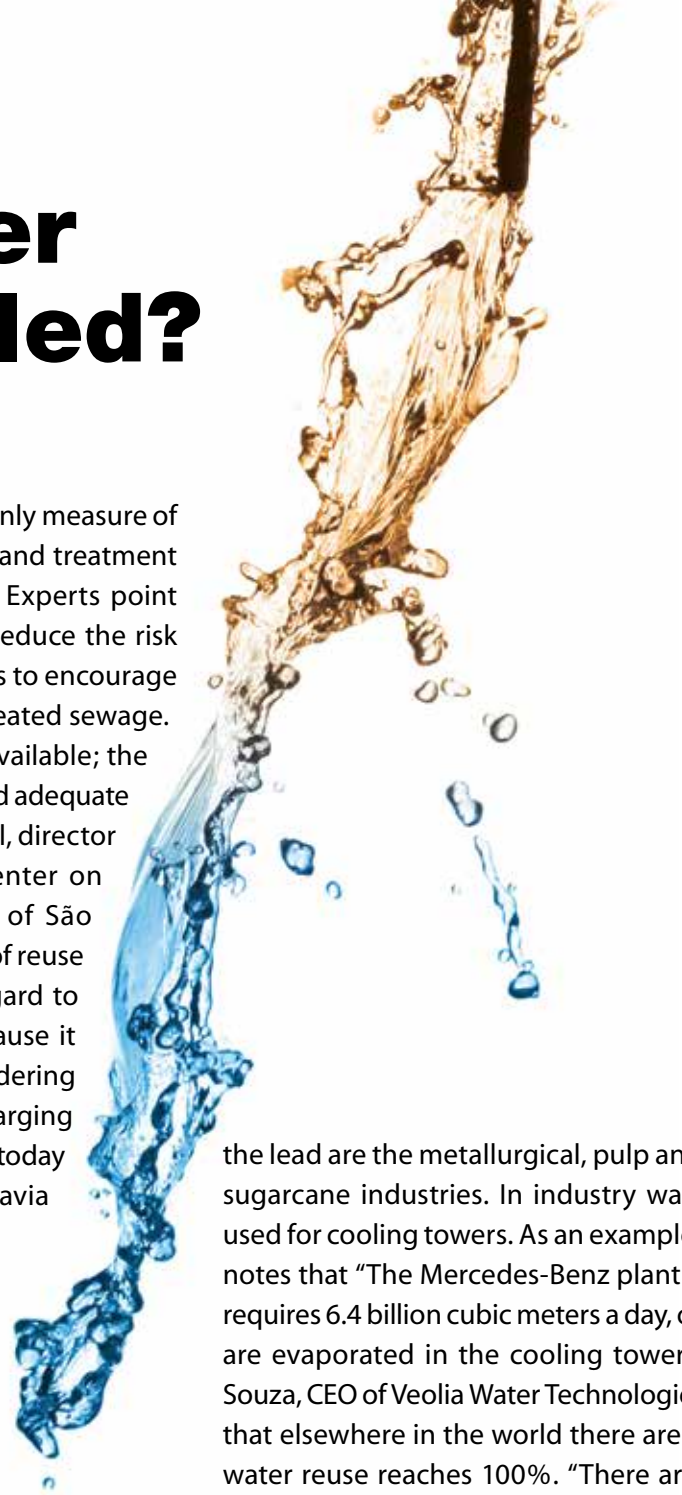
Can water be recycled?

Solange Monteiro



CUTTING WATER LOSSES is not the only measure of efficiency in expanding the supply and treatment of water and wastewater in Brazil. Experts point out that, to generate savings and reduce the risk of shortages, the country also needs to encourage investment in reuse of water and treated sewage. "We already have the technology available; the problem is the lack of political will and adequate legislation," says Ivanildo Hespanhol, director of the International Reference Center on Water Reuse (IRCWR), University of São Paulo. He thinks current regulation of reuse is unreasonably restrictive with regard to the quality of treated effluent because it tries to eliminate risk without considering the actual context of each reuse, charging that "In São Paulo state, for example, today we have the standards of Scandinavia but the rivers of Bangladesh."

Even so, the industry has taken the lead in reducing water-related costs. Large consumer companies usually need permits for both water intake and release of wastewater, the cost of which depends on the flow and the pollutant load. "In the beginning, these companies just treated the water to reduce the cost of permits. But then they realized that it was not just an effluent, it was a raw material, and began to take water from the environment more sparingly and return it to the river cleaner," Hespanhol explains.

Currently, a number of industries have not only invested in water reuse but also collect rain, reducing their intake from rivers by 40% to 80%. In the lead are the metallurgical, pulp and paper, and sugarcane industries. In industry water is mainly used for cooling towers. As an example, Hespanhol notes that "The Mercedes-Benz plant in São Paulo requires 6.4 billion cubic meters a day, of which 40% are evaporated in the cooling towers." Ruddi de Souza, CEO of Veolia Water Technologies, points out that elsewhere in the world there are cases where water reuse reaches 100%. "There are projects in Saudi Arabia that have zero water discharge, in which water is replenished only for evaporation losses," he says.

An outstanding example of reuse in Brazil today is the Aquapolo, a special purpose company created by Basic Sanitation Company of the São Paulo State (Sabesp) and Odebrecht Environmental company, that can treat a thousand liters of water per second. After treatment the water supplies the petrochemical complex of Mauá. According to Aquapolo, the water

savings generated are equivalent to the amount of water needed to supply a city with 500,000 inhabitants. Another example is the Water Supply and Sanitation Company of Campinas city in São Paulo state. In 2012, the company invested in a treatment plant with advanced ultrafiltration membrane technology that allows for removal of viruses, bacteria, solids, and nutrients. Its capacity is equivalent to the wastewater from 90,000 inhabitants, and the treated water supplies primarily the industrial hub of the city.

Value of sewage

Marco Aurélio Pereira da Silva, Aegea Director of Research and Development, cites examples from Germany of the economic potential of reuse of treated sewage. The first is in construction, where every year wastewater is used to wash 1.1 billion tons of sand, generating annual savings of about €1 million. The second is production of electricity from sludge to provide energy for sewage treatment plants for cities with 300,000 inhabitants, reducing the generation of solid waste.

In Piracicaba city, Aegea used a sludge drying technology based on solar energy that processes 17,000 metric tons of sludge annually, reducing its volume and saving over US$1 million a year in sanitary landfill. "By 2018 we hope to increase sludge drying to 34,000 metric tons, saving US$2 million," the company has announced. Because about 60% of dried sludge consists of organic matter, it has energy similar to charcoal and can be used in boilers that burn biomass.





AQUAPOLO

The project supplies the petrochemical complex of Mauá with reused water. Its capacity is equivalent to equivalent to the amount of water needed to supply a city with 500,000 inhabitants.

Valdir Folgosi, president, National Union of Manufacturers of Equipment and Environmental Sanitation, believes that Brazil has the technology to meet the demand for water reuse, but he is convinced development of this market will rely mostly on private water and sanitation private companies—public sector companies cannot innovate because the procurement law requires they purchase equipment for the lowest price.

Hespanhol points out that there is still much planning to be done. "We see today the municipalities and states drawing up sanitation master plans with little attention to water reuse," he says regretfully. He argues for comprehensive planning by identifying the main characteristics of the watershed in terms of agriculture, industry concentration, and urban density, and treating water and sewage differentially to meet the demand for each type of consumer. He also advocates for the National Water Agency to set criteria for water reuse and reduce the cost of permits for water intake from rivers for companies that find ways to reuse water.