Toilet-to-Tap Looks More Attractive With Water Harder to Find

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Purifying wastewater until it's safe to drink may not be appealing to think about—but it is becoming an increasingly viable option, and not just in the drought-plagued West.

The process goes by different names: "direct potable reuse," or the more derisive "toilet-to-tap." But regardless of what it's called, water utilities are growing more confident they can convince customers to look past the 'ick' factor and accept recycled wastewater coming through their faucets.

"From the time we're little kids, we're taught that wastewater is a bad thing—untreated, it is," Daniel Nix, the head of utilities in Wichita Falls, Texas, told Bloomberg Environment. "But if you've ever spent any time in a wastewater treatment plant anywhere in the U.S., these guys are doing high-quality work. They're producing a high-quality product from a low-quality product they receive, and they're just throwing it away."

If potable reuse is going to be a normal water practice moving forward, states have to be more active, said Greg Fogel, policy director with the WateReuse Association, an advocacy group based in Alexandria, Va.

Utility leaders said Texas has been in front on this issue by establishing a process for utilities that want to get involved, while other states, such as California and Arizona, are likely not far behind.

The potential benefits are massive: California, for example, currently recycles more than 500 million gallons of wastewater per day for drinking water, irrigation, and other uses, but it could be recycling 3.5 billion gallons a day, according to a 2018 report from the Water Environment Federation.

Goldilocks Regulations

Utility leaders said that, for direct potable reuse to thrive, a "Goldilocks"-type of regulatory environment will be needed: not too much, but not too little.

The utilities want state officials to create established policies for direct potable reuse. However, they're also worried the Environmental Protection Agency may step in and impose nationwide regulations.

More information will come later this year, when the Trump administration unveils its Water Reuse Action Plan, a document that will outline how the federal government can "ensure the effective use of the Nation's water resources," according to an EPA statement.

David Ross, head of the EPA's Office of Water, said at a water policy event in Washington that it's still unclear what will be in the plan, but that "this isn't 'The EPA is going to tell everybody how to do water reuse.'"

Puzzle Pieces

Wichita Falls, a community of about 100,000 near the Oklahoma border, was one of the first in the U.S. to try out a direct potable reuse system. It was implemented in 2014 after the city's reservoir levels continued to fall amid a persistent drought, despite a series of conservation initiatives.

Nix said one challenge was getting approval from Texas environmental regulators, who—despite the abundance of scientific research on potable reuse—had no frame of reference for the process.

"This has been studied ad nauseam," Nix said. "All of the puzzle pieces were out there. We just put the puzzle together."

Another, larger hurdle was convincing people in Wichita Falls that direct potable reuse was safe. He said the city turned to doctors and scientists to deliver the message, because "we knew that some of the public wasn't going to listen to a government official."

Eventually, amid fears that Wichita Falls' water supplies would run out, Nix said people were saying, "'What's taking so long? Don't they realize we're running out of water?'"

Communication is Key

On the other side of the state, the city of El Paso is working on setting up its own reuse program. Gilbert Trejo, the chief technical officer with the city's water utility, said El Paso opted not to hire an outside communications firm and instead did all its own outreach.

"I think that made a huge difference," Trejo said. "It was El Pasoans telling El Pasoans" what should be done, he said.

Trejo said El Paso also made a big push to the local media, when he learned many reporters had misconceptions about what happens to wastewater after it goes down the drain.

Though El Paso is hundreds of miles from the Gulf of Mexico, "some thought it went out to the ocean," he said. "It turned into a detailed education on the water cycle."

Indirect Reuse

While a few utilities are pursuing direct potable reuse projects, many more are looking at indirect potable reuse, where treated wastewater is pumped into a lake, wetland, or underground aquifer before coming back as drinking water.

Indirect reuse projects can solve many problems at once: A town can supplement its drinking water supplies, while also replenishing a depleted aquifer. That's what the Hampton Roads region in southeastern Virginia is trying to do with a project that by 2030 could send 100 million gallons of treated wastewater into its aquifer every day.

At first glance, southeast Virginia is an unlikely place to adopt potable reuse, since it receives nearly four feet of rain a year.

But Jamie Heisig-Mitchell, head of technical services with the Hampton Roads Sanitation District, said the aquifer underneath the region has been severely overexploited and, along with sea level rise, that is causing severe land subsidence. Pumping treated wastewater into the aquifer rather than letting it run out to sea can help reverse this trend, she said.

Gwinnett County, Ga., just outside of Atlanta, has also been reusing water indirectly as a way to reduce pressure on one of the region's main reservoirs, Lake Lanier.

Too Valuable to Waste

Orange County, Calif., has been pumping wastewater underground to prevent the salty Pacific Ocean from contaminating its freshwater aquifer. Mike Markus, general manager of the Orange County Water District, said the county has expanded its reuse facilities over the years, now pumping all of Orange County's wastewater underground and sending none of it out to sea.

Markus said wastewater is simply too precious a resource to waste.

"We live in the dry Southwest," he said. "For us, it's very important to develop local water supplies and reliable water supplies that we can depend on."

Flagstaff, Ariz., has placed such a high value on treated wastewater that it now has to make difficult choices about who gets to use it, and how much.

Commodity in Demand

Erin Young, a water resources manager with the city, said Flagstaff is one of many cities across the country that supplies non-potable treated wastewater to golf courses, parks, and some homes to use as irrigation. The demand for this wastewater is so high that, in the drier summer months, the city doesn't discharge any effluent, Young said.

So, while Young said the city is interested in potable reuse as a way to hedge against future droughts, the city has very little wastewater to spare.

El Paso's Trejo said potable reuse is one of many tools that can diversify sources of drinking water, an existential issue for many communities in the West that are facing less predictable weather and hydrologic patterns.

“You really can’t have enough,” he said. “You can’t rest on your laurels when it comes to developing water supplies.”

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