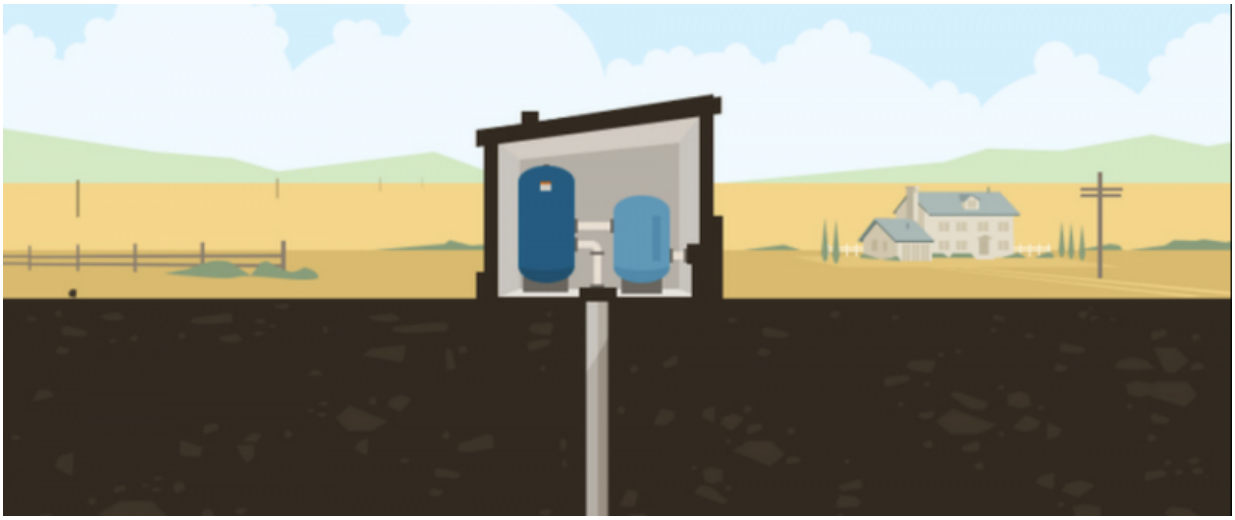
Startup helps people find out what they're drinking

October 10 2016, by Nate Seltenrich



Credit: University of California - Berkeley

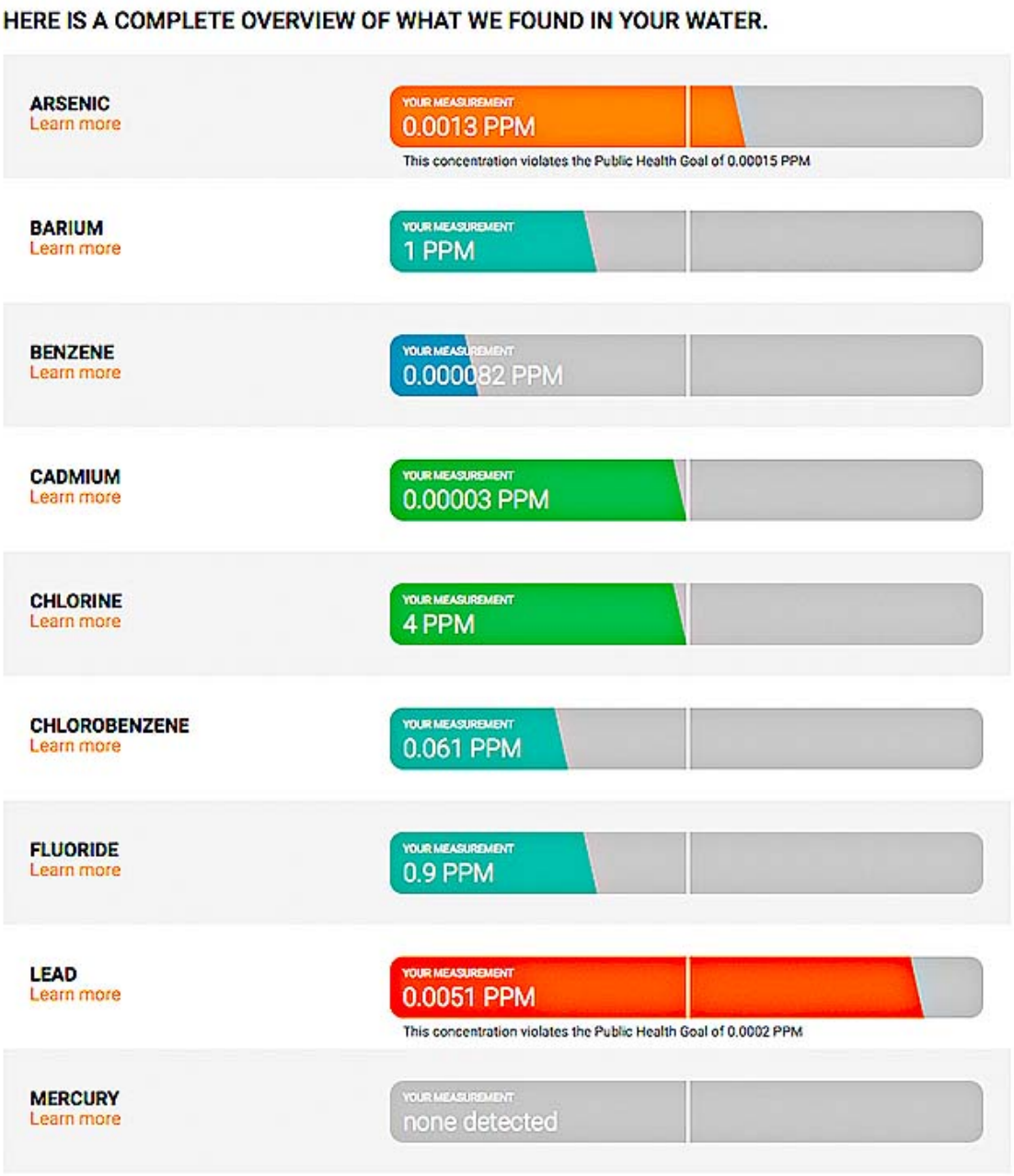
Two factors that contributed to the poisoning of tens of thousands of Washington, D.C., residents through their drinking water in the early 2000s—lead pipes and a disinfectant called chloramine—continue to coexist in countless water systems nationwide, including in the Bay Area. But not to worry, says UC Berkeley water expert and engineering professor David Sedlak; they're safe when properly managed, which happens in the vast majority of public water systems.

However, tens of millions of U.S. residents get their water from private

wells that have no oversight at all. That's where a team of Berkeley scientists and entrepreneurs—led by John Pujol, civil and environmental engineer; and Susan Amrose, assistant project scientist and lecturer in Cal's engineering department, and program director at Berkeley Lab's Institute for Globally Transformative Technologies—sees the largest unchecked threat to drinking-water safety in this country.

To help plug the gap, Pujol and Amrose formed a startup called SimpleWater. They hired a small staff including six Berkeley MBA- and Ph.D.-level interns, and recently launched their first, and so far only, commercial product: a water-testing and product-recommendation service called Tap Score. Customers order their Tap Score testing package online for $199, then fill testing bottles with tap water and mail them to the nearest laboratory in the Tap Score network.

"The long-term vision is that people can take more control of their own water," said Pujol, who serves as SimpleWater's CEO. Lead may be among the most dangerous hazards, but it's far from the only threat looming in aquifers and water pipes. "There's a lot of new contaminants in our water supply, and people are becoming more aware of that. A lot of these contaminants are on-premises issues."



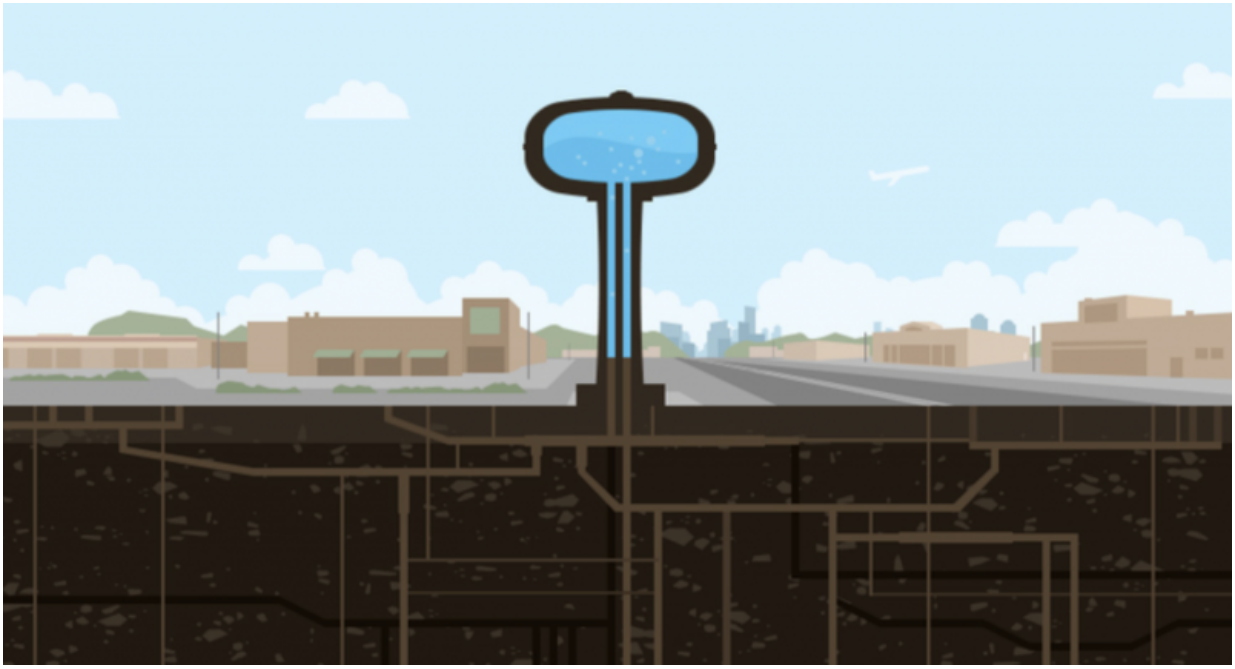
A sample report from TapScore shows the color-coding for unsafe levels of contaminants. Credit: University of California - Berkeley

The labs test for more than 100 potential contaminants—lead, mercury, arsenic, and a host of less pronounceable pollutants—and send the results

to SimpleWater for analysis. The company then prepares and digitally delivers a personalized plain-English, graphic-rich report. This details what's in the water, where it may have come from, and how levels compare to health standards and regulations; then it breaks down treatment options, if necessary, even recommending appropriate commercial products.

For example, to remove arsenic, which naturally occurs in groundwater around much of the world, or nitrates, commonly leached from agricultural runoff or septic systems, the company might suggest an under-sink reverse osmosis filter. Prices can range from a couple hundred dollars for a budget system, to nearly $1,000. But Pujol says these point-of-use systems represent an affordable way of avoiding a wide range of harmful contaminants, even when compared with buying bottled water. The company bases its recommendations on certifications, performance metrics, expert and consumer reviews, and in-house technical analyses, Pujol adds.

In fact, arsenic is something the company knows particularly well. SimpleWater was founded in 2014 after securing a one-year startup license for a community-scale arsenic-remediation technology called ECAR (electrochemical arsenic remediation). One problem with arsenic is that the particles are too small for ordinary filters to work. ECAR was developed at Berkeley in 2005 by Amrose, civil and environmental engineering professor Ashok Gadgil, and Berkeley Lab staff scientist Robert Kostecki. The technology involves electrifying submerged iron plates to accelerate rusting. Arsenic in the water naturally bonds to the rust, forming a larger particle that sinks to the bottom for safe removal.



Water treatment chemicals can cause harmful disinfection byproducts. Credit: SimpleWater

Commercialization of SimpleWater's ECAR-based product, ArsenicVolt, is on hold after $300,000 in funding from the U.S. Environmental Protection Agency fell through. However, an Indian company with its own license is already deploying the technology at a rural high school in West Bengal.

SimpleWater's current testing-based business model could be expanded in the future to encompass ECAR again, finances permitting. Amrose remains on board as a scientific adviser, and the company is negotiating with Berkeley Lab to secure a longer-term license.

In the meantime, Pujol has high hopes for Tap Score. The service is all about empowerment, he says, something today's consumers have come

to expect—particularly when it involves their health. "You don't need to wait for people to tell you these important, vital statistics," he says.

Provided by University of California - Berkeley