California set to become first state to test drinking water for microplastics

Kurtis Alexander

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Microplastic is everywhere.

The tiny particles that shed from clothing, food packaging and tires are in...
the air, the soil, the ocean and, almost certainly, your drinking water.

This week, California is poised to become the first place in the nation, and perhaps the world, to begin requiring water agencies to test for the contaminant. State water regulators, after years of working with more than 20 labs in seven nations to pioneer a means of monitoring microplastics, are scheduled to adopt a testing and reporting requirement Wednesday.

“This is pretty big,” said Scott Coffin, a research scientist at the State Water Resources Control Board who has led the regulatory effort. “Typically we depend on the U.S. EPA to develop methods, but they’re really behind on microplastics so we did it ourselves.”

The hope is get a handle on an issue that has only recently come to the fore of environmental research, though the proposed monitoring program remains far from perfect. State regulators acknowledge their protocols and instruments for detecting microplastics are still being worked out and aren’t completely accurate.

Perhaps more significant, state officials - and scientists in general - don’t know if, or at what level, microplastics in drinking water are bad for people. Research has shown that the small fragments, defined as plastic bits that are 5 millimeters or less, end up in the lungs, guts and bloodstreams of humans and can cause cell damage. However, studies are yet to document any long-term health impacts across a broad population from the relatively new pollutant.
“There’s always been this hesitation to do something when we don’t know exactly what the negative effect is, but here we have a chance to act early,” said Susanne Brander, an environmental toxicologist and associate professor at Oregon State University who worked with state regulators to develop the program. “I think California is taking the right approach: Let’s look into it a little more and see if this is an issue.”

Plastic pollution was initially discovered to be a problem with health and beauty products decades ago. Toothpastes, shampoo and scrubs containing microbeads, which serve as exfoliants, have since been banned in the U.S. However, as plastic has continued to replace natural materials in so many consumer goods, it’s increasingly ending up in the environment.

Microplastics have been detected in the deep ocean, the Arctic, the jet stream blowing between continents and the innards of fish and wildlife.

“It didn’t occur to so many of us (until rather recently) that these materials are breaking down and causing widespread pollution,” Brander said. “As a toxicologist, I’m ashamed it took us so long. At least we’re on it now.”

California’s regulation aims to pick up where water treatment facilities leave off. Standard treatment techniques generally remove some plastic, but the smaller particles are thought to remain. These smaller particles also are believed to be potentially more harmful because people don’t excrete them as easily and they can accumulate in the body.

Under the state proposal, up to 30 of the state’s largest water providers, including the San Francisco Public Utilities Commission, East Bay Municipal Utility District and Santa Clara Valley Water, would have to begin monitoring for microplastics in their drinking water sources, such as reservoirs or rivers, starting next year.

The state’s protocol calls for using newly created sampling devices to collect water four times a year and then sending it to one of a handful of labs.
working with the State Water Board for analysis. The labs intend to identify the plastic, as well as its size, shape and color, by observing the material’s light wavelengths through Raman or infrared spectroscopy. The results would be reported publicly online for water customers to view.

The cost of the testing would be borne by the water agencies, though state officials say it would be low.

Water providers, including the San Francisco Public Utilities Commission, have generally supported the push to monitor for microplastics. Most of the concern that has arisen has been with technical aspects of the new methods and whether the findings will be useful given the lack of understanding of any threat.

The program is required under a state law passed in 2018, which sought to make sure California’s health and safety codes for drinking water weren’t ignoring a potential hazard. The legislation requires four years of testing for microplastics and opens the door for possible guidelines on what levels are appropriate. But it stops short of putting in place controls.

“We just don’t know how much is too much and how much we’re exposed to, but those are components we’re hoping to figure out,” said Coffin, with the State Water Board.

Coffin expects breakthroughs in research soon to reveal the extent of any health issues. He says the studies could show limited harm to humans or, conversely, uncover the source of long unexplained problems such as the declining sperm count and fertility in men.

“We don’t have quite the evidence that we need,” he said, “but we’re pretty close.”

Kurtis Alexander is a San Francisco Chronicle staff writer. Email: kalexander@sfchronicle.com Twitter: @kurtisalexander

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Before joining the Chronicle, Alexander worked as a freelance writer and as a staff reporter for several media organizations, including The Fresno Bee and Bay Area News Group, writing about government, politics and the environment.