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Should We Break Our Bottled Water Habit?

Americans spent \$31 billion last year on bottled water. CR's investigation may make you rethink what you drink.

By Ryan Felton

Last updated: October 09, 2019

For a glimpse into America's complicated relationship with drinking water—bottled and tap—consider the town of Hudson, Mass., 40 miles west of Boston. This spring, residents grappled with fallout from routine tests that found chemicals in their tap water known as per- and polyfluoroalkyl substances, or PFAS (pronounced P-fas). These compounds have been linked to cancer, developmental delays in children, decreased fertility, and other health problems.

In response, Hudson officials began distributing free cases of bottled water to residents, and thought they had enough to last about eight weeks while the contamination was addressed. But demand was so great, with lines at times snaking out of the parking lot where the water was distributed, that the supply was gone in less than a month.

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When residents arrived on a weekday in May at the donation site in town, they were greeted by an electronic sign that said, “Bottled Water Program Has Been Suspended.” Remarking on the situation, Thomas Moses, the town’s chief administrative officer, says, “There’s a lot of panic about the [tap] water—legitimately.”

After several months, the town’s tap water was effectively treated for PFAS. But the clamoring among Hudson’s residents for bottled water underscores a wider belief among consumers that bottled is safer than what flows out of their taps.

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MORE ON BOTTLED WATER

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Arsenic in Some Bottled Water Brands at Unsafe Levels, Consumer Reports Says

Keurig Dr Pepper Withdraws Peñafiel Bottled Water Due to Excessive Arsenic Levels

Water Quality & Safety Guide

In some cases, as in Hudson, that is true. But a Consumer Reports investigation finds that information about bottled water quality is hard to find, oversight of the industry is inconsistent, and as with tap water, some bottled water can be contaminated.

For evidence, look no further than Spring Hill Dairy Farm, a company 40 miles north of Hudson in Ward Hill, Mass. Until recently, it provided water to several bottled water brands, including Whole Foods' 365 Spring Water and Ice Canyon Spring Water, sold at CVS. But in August, as Hudson was resolving its water crisis, Spring Hill shut down its bottled water business after tests found PFAS chemicals in its spring water. (The bottled water Hudson provided residents was a different brand.)

Fueled in part by concerns about the quality of the nation's tap water—not just in Hudson but also in Flint, Mich., and Newark, N.J., where lead contamination crises have generated national headlines—bottled water has become the country's No. 1

beverage, with the average American consuming 42 gallons in 2018. And sales reached \$31 billion in the same year.

Bottled water's growing popularity stems in part from its convenience but also from the perception that it's higher-quality water. Forty percent of Americans believe bottled is safer than tap, according to a nationally representative 2019 Consumer Reports survey of 4,225 U.S. adults.

The Rise of Bottled Water

See how much the average American consumes of the nation's most popular non-alcoholic bottled beverages each year.

2015

Carbonated soft drinks	38.8 gallons
Bottled water	35.7 gallons
Milk	17.7 gallons
Fruit drinks	9.7 gallons

Source: Beverage Marketing Corporation DrinkTell Database.

Graphic: Andy Bergmann

That’s a perception encouraged by the bottled water industry—even as it relies on municipal supplies: Nearly 64 percent of bottled water sold in the U.S. is filtered tap water, according to a 2018 report from the advocacy group Food & Water Watch. One example: Earlier this year, Cott, which sells several brands of water, told investors, “We intend to capture new customers as we capitalize on favorable consumer trends,” including “concerns about deteriorating municipal water quality.”

But even as bottled water sales have risen, tap water quality overall doesn’t appear to be getting worse. Since 2013, the percentage of the U.S. population serviced by community water systems with at least one reportable health-based quality

violation has stayed below 10 percent, according to the most recent data from the Environmental Protection Agency, which regulates tap water. These systems provide water to more than 90 percent of Americans, according to the EPA. “The United States provides some of the safest drinking water in the world,” an agency spokesperson says.

To be sure, the vast majority of bottled water sold today also appears to be safe. But it isn’t necessarily better overall than tap, and there are some reasons for concern, CR found.

In response, Jill Culora, vice president of communications for the International Bottled Water Association, a trade group, says many Americans drink both bottled and tap and decide “what type of water is best for them,” based on taste, convenience, and quality.

Over the past year, CR has interviewed more than 50 experts and state and federal regulators, and amassed thousands of pages of regulatory filings, lawsuits, consumer complaints, and government documents obtained through Freedom of Information Act requests. CR’s investigation shows that safety inspections of water bottling facilities by the Food and Drug Administration, which regulates bottled water, have declined over the past 15 years.

An FDA spokesperson says the agency takes “prompt action” when it obtains evidence that a product poses a safety risk, adding that federal regulations ensure that bottled water is “safe, wholesome, and truthfully labeled.”

But while the FDA requires companies to test the quality of their products, the agency typically doesn't conduct its own tests. And companies aren't required to make the results of their tests available to the public, and often don't: CR was able to get reports from just 133 bottled water brands, barely half of those we identified.

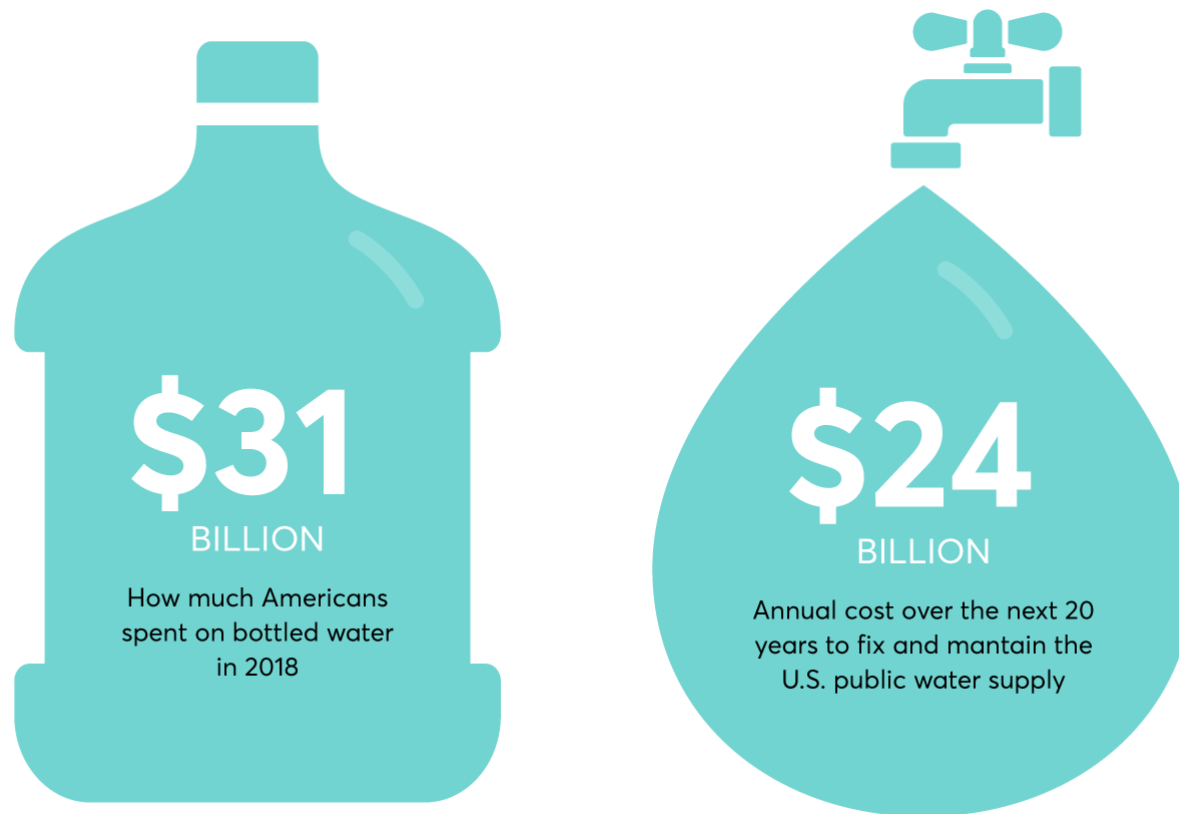
Moreover, when tests are performed by independent organizations, problems can emerge. For example, CR's spot tests of three bottled water products in April 2019 helped to prompt one brand—Peñafiel, owned by Keurig Dr Pepper—to take its unflavored mineral spring water off the market after high levels of arsenic, a potentially dangerous heavy metal, were uncovered.

The IBWA says the industry is subject to rigorous oversight. “While bottled water companies strive to make safe, high-quality products, there have been instances when products did not meet FDA standards,” it says. “When that has happened, bottled water companies have taken the appropriate steps to ensure the safety of consumers.”

CR also found that the decision of what to use as your primary drinking water depends on where you live, the health of your municipal supply, and the pipes in your home.

And the long-term solution isn't for more Americans to turn to bottled water, but to fix the nation's water infrastructure, advocates say. The EPA says that over the next 20 years, fixing and maintaining the nation's reservoirs, treatment plants, and pipes would cost about \$24 billion annually—\$7 billion less than what Americans spent on bottled water last year.

“Bottled water is not an acceptable substitute,” says Mary Grant, director of the Public Water for All Campaign at Food & Water Watch. “We need to build resilient water systems.”



Sources: Beverage Marketing Corporation and Environmental Protection Agency.

The Fate of Public Water

The vast majority of Americans appear to have access to safe tap water—but some communities face real problems. In Hudson, for example, town administrator Thomas Moses spelled out a quandary communities such as his face. While the EPA currently offers voluntary guidance on PFAS chemicals—two common ones should stay below 70 parts per trillion—there is currently no federal mandatory limit.

Without federal standards, states and municipalities are left to decide on their own whether to look for the chemicals, and what to do if they find them. Hudson, for example, began testing for PFAS chemicals in 2016 and discovered alarming PFAS levels earlier this year.

It's easier for public water suppliers to address contaminants that have established limits, Moses says. But emerging threats such as PFAS will always come along. “In the next year, next two years, next decade, it will be something else,” he says.

The concern among Hudson's residents about the town's water supply reflects a common view across the U.S. In some places, water infrastructure appears to be at a breaking point, with some lawmakers seeking an additional \$35 billion per year to maintain it.

The lack of investment is widespread: Detroit public schools shut off all drinking water last year because of high copper and lead levels. A town in West Virginia has been on a boil-water advisory since 2002 because its system is in a state of disrepair. And some Americans live without running water at all: As of 2018, nearly

340,000 homes in the U.S. didn't have access to running water, according to a CR analysis of federal census records.

What's more, 34 percent of Americans—or 110 million people—say they regularly avoid drinking tap water at home because of safety concerns, according to CR's recent survey. About one-sixth say they don't drink their home tap water at all.

Part of the issue could be a lack of information. Under EPA regulations, people on community water systems should receive an annual copy of their Consumer Confidence Report, which spells out the quality of their tap supply. But more than 5,000 such systems were recently cited for violating that rule, EPA data show. Almost 80 percent of people with municipal water say they've never received a CCR, and 60 percent have never heard of it, CR's survey found.

Pushing Back on Plastic

Just 20 miles from Hudson, the town of Concord, population 17,000, has had a different experience with bottled water. Several years ago, it became the first community in the U.S. to ban the sale of single-use plastic bottles of water. In making their case, supporters emphasized the environmental toll of the billions of bottles Americans dispose of each year, as well as the town's long history of safe tap water.

Still, it took supporters more than three years to persuade Concord's residents to support the ban. "We were up against 30 years of marketing by an industry" with endless resources, says Jill Appel, a Concord resident who aided the effort.

As concerns about the environmental harm from plastic water bottles spread, the industry is responding in part by starting to package water in, for example, cardboard cartons. Indeed, you can now buy water in such containers in Concord.

The War Against Tap Water

Even a quarter century ago, buying water in any kind of bottle would have seemed “ludicrous,” says James Salzman, environmental law professor at the University of California, Los Angeles, and author of the book “Drinking Water: A History” (Harry N. Abrams, 2012).

Eventually, bottled water came to be seen as chic, Salzman says, in part because of celebrity endorsements. (That trend continues: In the past year, Dwayne Johnson and Gwyneth Paltrow, among others, have partnered with bottled water brands.)

But it wasn't until 1990, when Nestlé introduced the convenience of the single-use PET bottle, that bottled water caught on with the public, according to “Bottled and Sold” (Island Press, 2010), a book by Peter Gleick, co-founder of the Pacific Institute, an environmental group. Over the following decade, the growth of bottled water was also spurred by industry efforts to play up the purity of its new product.

By 1999, consumers browsing the IBWA's website may have seen this question: “Does bottled water contain any harmful chemicals that can pose a threat to human health?” The IBWA's answer: “No.” But federal records show that in the 1990s there were around 50 recalls of bottled water for excessive chlorine, mold, and fecal coliforms. The IBWA still defends its statement, saying that it was meant

to be “general in nature” and that many of the recalls posed “no meaningful health risk.”

Yet independent tests at the time had found contamination. A 1999 study by the National Resources Defense Council of more than 100 brands found that nearly 1 in 4 violated California limits for arsenic or other carcinogenic compounds. And tests CR conducted in 2000 found samples at or above the arsenic limit of 10 ppb, a standard that was finalized in 2005.

The industry’s adversarial stance toward tap water intensified from there, a trend documented in Gleick’s book. “At the time,” Gleick tells CR, “there was a really explicit campaign to demonize tap water.” He quotes Robert Morrison—who was then soon to be chairman of Pepsi’s North American Beverage and Food Division—as saying in 2000, “The biggest enemy is tap water . . . it just has its place. We think it’s good for irrigation and cooking.”

The next year, Coca-Cola, which sells Dasani, generated controversy after it was revealed that the company worked with Olive Garden restaurants on a campaign called “H2NO” to push money-making beverages instead of tap. (Notably, Coca-Cola uses public water as its primary source for Dasani.)

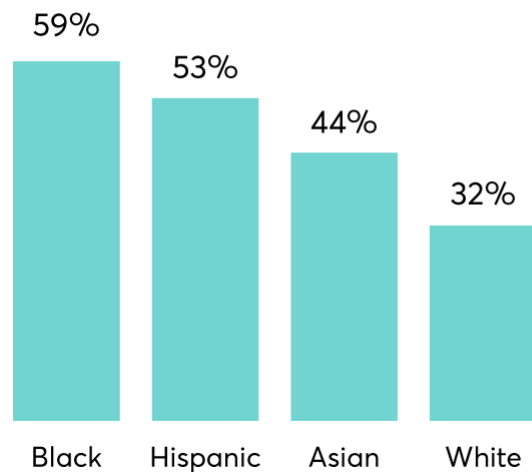
Bottlers continued to take shots at tap water, as in a 2006 Fiji ad Gleick also covered in his book: “The label says Fiji because it’s not bottled in Cleveland.” Cleveland officials later tested the city’s public water as well as a bottle of Fiji, and found that the Fiji water contained arsenic while its water did not. (Fiji reportedly said it was only a joke.)

The industry has since tried to dial back the anti-tap rhetoric, framing bottled water as a healthy alternative to sugary drinks. But even now, records show that bottlers view the deterioration of the nation's public water infrastructure in the context of their business prospects.

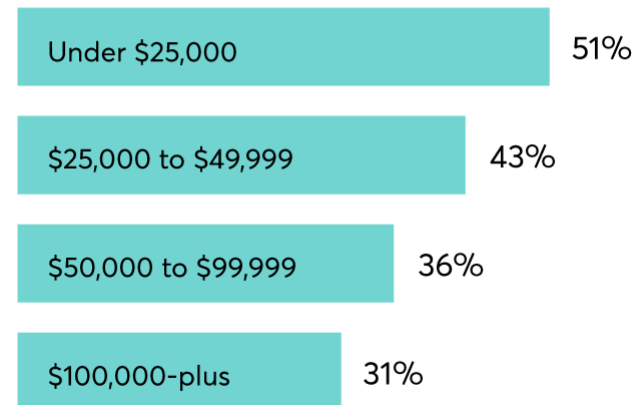
Bottled Water Safety Perception

Percentage of people who think bottled water is safer to drink than tap water.

By Race



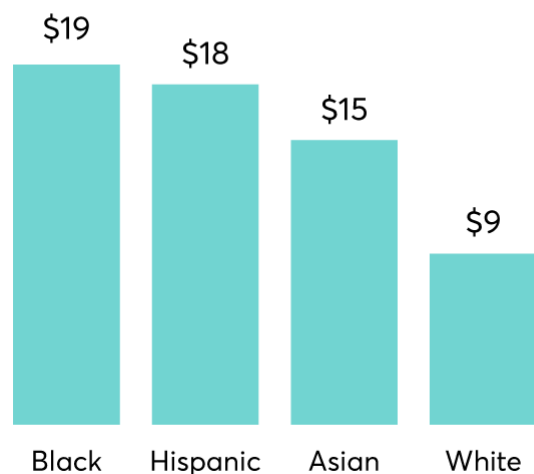
By Annual Household Income



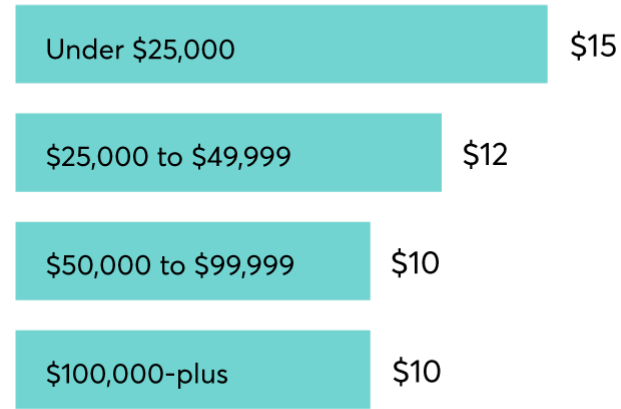
Monthly Spend on Bottled Water

Median amount spent each month on bottled water, per household.

By Race



By Annual Household Income



Source: Consumer Reports nationally representative survey of 4,225 Americans. Note: Race categories (white, black, and Asian) include only respondents of non-Hispanic ethnicity and exclude those who identify as more than one race.

Some, such as Coca-Cola and Pepsi, have said in public filings that tap water quality problems could hurt their bottom line by jeopardizing the safety of a primary ingredient for their businesses.

Others see tap problems as a potential boon. Earlier this year, Primo Water, which produces purified bottled water that can be filled at self-service dispensers, wrote in a filing with the Securities and Exchange Commission, “We believe the market for purified water continues to grow due to evolving taste preferences, perceived health benefits, and concerns regarding the quality of municipal tap water.”

Maria Mullen, Primo's vice president of consumer experience, says that many consumers choose bottled water as an alternative to sugary drinks and that the company isn't "choosing to make municipalities the bad guys." Rather, it's "reacting" to the market. "You have to have your head in the sand if you don't see there are growing issues related to the quality of municipal tap water," Mullen says.

Back in Hudson, town administrator Moses says that even with test results showing that Hudson's tap water is safe, some residents just can't be persuaded to drink it. "The water that we're producing meets all current regulations and health advisories," he says. "I mean, that's all you can say."

The Water Information Gap

Government regulators generally don't test bottled water themselves, and bottled water makers aren't required to publish their own test results. So over the past several months, CR assembled a repository of test reports from bottled water brands ourselves. Ultimately, we identified 236 such brands—but were able to get reports from only 133 of them, or 56 percent, either from their website or by contacting the manufacturer directly.

Information on the safety of tap water is also limited. For example, the EPA doesn't regulate private wells, which supply water to 14 percent of Americans, according to CR's survey. And for some contaminants—notably lead—the EPA's testing provides only a representative sample of each system's quality, not what comes out of each home's tap.

Just over 7 percent of the community water systems regulated by the EPA had at least one instance of violating a health-based standard, recent EPA data shows. That includes exceeding a drinking water contamination limit.

When it comes to bottled water, precise figures can be even harder to come by. But the reality is that contamination in bottled water exists. It's just difficult for consumers to find out about it.

CR's review of water quality test reports we gathered from companies and regulatory agencies, combined with our spot tests of bottled waters, found that 6 percent of brands had a contaminant that exceeded state or federal limits.

CR also reached out to all 50 states on their bottled water requirements, and 32 provided responses. Of those, only 14 say they require bottlers to notify regulators immediately about test results showing excessive contaminants.

When instances of contamination are documented, regulators can be slow to respond. The lax enforcement contributes to scenarios such as Keurig Dr Pepper's two-month delay earlier this year in pulling Peñafiel from the market, even after the company temporarily suspended production following CR's tests showing arsenic at almost twice the legal limit.

And information about these kinds of problems is not always widely shared. For example, Starkey Water (owned by Whole Foods), withdrew its bottled water twice in 2016 and 2017 because of high arsenic levels. But neither instance shows up in CR's review of archives of company and FDA press releases. (CR tests last spring

found Starkey still has about 9 ppb of arsenic, just shy of the federal limit of 10 ppb. Starkey said earlier that it tests every production run of water before it is sold and would “never sell products that do not meet FDA requirements.”)

New Jersey regulators have also found bottled water with antimony (a potentially harmful heavy metal) at five times the federal limit, arsenic at double the limit, and radium (a radioactive metal), but none of these results appear to have been widely publicized. Massachusetts published a link on its website about the recent contamination of Spring Hill bottled water with PFAS but did not otherwise appear to alert consumers.

Emerging contaminants such as PFAS pose particular reporting problems as regulators try to play catch-up. Michigan, which has been grappling with PFAS in tap water in some communities, implored the IBWA last fall to require its members to start testing for the chemicals. The state’s representative said, in a letter obtained through a FOIA request, that it had conversations with unnamed bottlers and that PFAS contamination didn’t appear to be a problem. But, the letter added, “that statement is only true of those specific bottlers.”

The IBWA says it now requires members to test for PFAS, but it doesn’t represent all bottlers. Spring Hill, for one, is not a member.

By comparison, oversight of tap water is more standardized and rigorous, says Gleick at the Pacific Institute. For example, when a community water system discovers a level of a contaminant that potentially poses an immediate health

threat, it must notify regulators within 24 hours. That's one reason tap water contamination is an all-too-common feature of evening news broadcasts.

“There's plenty of attention already in the media to the times we have problems with our tap water system,” Gleick says. “I think the bottled water companies understand they don't have to do that.”

The Future of Drinking Water

Going forward, two things seem certain: The bottled water market will continue to grow, and bottled water is not a long-term solution to the nation's drinking water problem. “If we don't invest in our water infrastructure, we are going to have more people with tap water they cannot drink,” says Patty Lovera, assistant director at Food & Water Watch. Her group supports the Water Affordability, Transparency, Equity and Reliability (WATER) Act of 2019 now in Congress. The act would increase funding by \$35 billion per year for drinking water and wastewater improvements.

Another key step: Community water systems need to ensure that the people they serve get easy-to-understand annual water quality reports. In CR's survey, a quarter of people on municipal water who tried to learn about the quality of their local water said they couldn't find the information. The organizers of Concord's ban on single-use water bottles say that municipalities with safe drinking water can and should make it a point to ensure that their residents know about it.

Communities with safe water supplies could consider making it easier for people on the go to refill their own water bottles. That's what Concord did, and today the town has a robust network of businesses in town providing free tap water to anyone who comes in and asks for it.

Hudson's experience suggests that addressing problems with tap water works, too. The town invested in a new filtration system capable of removing PFAS. And testing last August didn't detect any PFAS in the town's water.

For homes, a number of filters that remove toxic substances, such as lead, are available. Pricier options, such as reverse osmosis systems, can be installed, and professional water testing can be performed for as little as \$20. State or local health departments might also offer free water test kits.

If you want to drink bottled water or have to rely on it for any reason, contact the bottler for a copy of its most recent quality report. These results are from the company itself but provide some reassurance.

The IBWA's advice: Don't buy products from any company that won't share its water quality report.

Editor's Note: A previous version of this story incorrectly described the voluntary guidance for contamination limits of PFAS chemicals in water. It's 70 parts per trillion, not 70 parts per billion.

This article also appeared in the November 2019 issue of Consumer Reports magazine.

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