

**PUBLIC DRINKING WATER POLICY  
ON TAP AT A FOUNTAIN NEAR YOU**

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## **I. INTRODUCTION**

The public drinking fountain is the ultimate delivery tool to hydrate the public. Unfortunately, this simple, elegant device has been neglected and fallen into disrepair, displaced by ubiquitous reliance on single-use, plastic-bottled water—with alarming consequences for the environment, human health, and economic justice. While most municipal water agencies in The United States provide some of the world’s best quality tap water, the future of public drinking water is threatened by poor infrastructure investment, inadequate pollution management, and corporate control over natural resources. Climate change further jeopardizes our precious water resources, all while a growing and increasingly urban population requires increased hydration to survive hotter temperatures.

Such significant threats to tap water must be countered through strategic public policy—or they will invite public health disasters. Without public trust in and sufficient access to tap water, corporations will continue to fill the void with costly, polluting, and water-wasting bottled water.

This article posits that a public trust and human rights approach to water policy is required to protect our drinking water now and for future generations. An effective drinking water system should focus on fountains that can be accessed readily at all times in schools, parks, transportation hubs, and other public areas. Drinking water education for school children and the general population is necessary to promote healthy, sustainable hydration habits and to ensure continued investment and confidence in public water systems.

This paper is dedicated to increasing understanding of and appreciation for tap water and drinking fountains in order to build support for continued protection and investment. The material is organized as follows: (1) introduction of healthy, safe tap water as a precious community resource, and the public drinking fountain as the perfect tap water delivery vehicle; (2) examination of several modern threats to drinking water; (3) discussion of the problems that plastic-bottled water presents to human health, the environment, and economic justice; (4) consideration of legal approaches that serve to protect water resources and human health; and (5) recommendations for policy solutions that emphasize public water fountain installation, maintenance programs, and educational campaigns.

## **II. HYDRATING THE PUBLIC**

### **A. Water is Life**

*People protect what they love, they love what they understand,  
and they understand what they are taught.<sup>1</sup>*

– Jacques-Yves Cousteau

We value what we need and, just as we need air to breathe, we need water to drink.

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<sup>1</sup> “Mission.” *Fabian Cousteau Ocean Learning Center*, [www.fabiencousteauolc.org/about/mission/](http://www.fabiencousteauolc.org/about/mission/). (Last accessed 15 July 2019.)

Without drinking water, we cannot survive more than a few days. Yet society fails to emphasize proper tap water hydration as a fundamental civic function—because we have gradually ceded control of a vital public resource to domestic and international corporations that market and sell a public commodity packaged in plastic.

In order to protect our water resources to ensure both quality and quantity for generations to come, we must reclaim democratic, public control of water. Schoolchildren and the public at large would benefit greatly from lifelong multi-disciplinary education on the civic and health values of proper tap water hydration, laws and regulations to protect water, and the work of utilities that provide drinking water across the nation. Policies should support tap water consumption, normalizing and embedding it once again into the fabric of public life through the public drinking fountain.

As much as 60 percent of the human body is water.<sup>2</sup> Water is lost through perspiration, waste eliminations, and even breathing; under extreme conditions, an adult can lose one to 1.5 liters of sweat per hour.<sup>3</sup> If that lost water is not replaced, blood volume may drop,<sup>4</sup> which in turn may cause blood pressure to fall to fatal levels.<sup>5</sup> Body temperatures also rise when the body cannot cool itself through perspiration. Dehydration that causes a loss of ten percent of body weight is considered a medical emergency that will quickly become deadly if rehydration is not initiated immediately.<sup>6</sup> Vulnerable populations, such as the sick, elderly, those exposed to the elements, youth, and pregnant women, have even more urgent needs for hydration.

As temperatures rise, dehydration-related deaths are likely to increase. For example, the number of heat-related deaths in southern Nevada in 2017 soared nearly 58 percent (over the previous year) during the hottest summer ever recorded at that time, prompting health officials to warn the public to stay inside and hydrated.<sup>7</sup> Insufficient access to drinking water in public

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<sup>2</sup> See, e.g., “The Water in You: Water and the Human Body.” *U.S. Dep’t of the Interior, U.S. Geological Survey Water Science School*, [water.usgs.gov/edu/propertyyou.html](http://water.usgs.gov/edu/propertyyou.html). (Last accessed 15 July 2019).

<sup>3</sup> Packer, Randall. “How Long Can the Average Person Survive Without Water?” *Scientific American*, [www.scientificamerican.com/article/how-long-can-the-average/](http://www.scientificamerican.com/article/how-long-can-the-average/). (Last accessed 15 July 2019.).

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> Maldarelli, Claire. “This is What Happens to Your Body as You Die of Dehydration.” *Popular Science*, 28 Feb. 2017, [www.popsci.com/dehydration-death-thirst-water](http://www.popsci.com/dehydration-death-thirst-water).

<sup>7</sup> Bekker, Jessie. “Heat Related Deaths Spiked in 2017, Says Report.” *Las Vegas Review-Journal*, 5 July 2018, [www.reviewjournal.com/local/local-las-vegas/heat-related-deaths-in-las-vegas-spiked-in-2017-says-report/](http://www.reviewjournal.com/local/local-las-vegas/heat-related-deaths-in-las-vegas-spiked-in-2017-says-report/).

venues, such as parks and outdoor concerts, have led to many deaths. For example, a man who had complained that he did not have access to water at an outdoor concert in Las Vegas later died.<sup>8</sup> The venue had failed to supply enough water stations, forcing people to wait in line for over an hour to obtain water.<sup>9</sup> On the day of his death, the man's temperature reached 109.6 degrees, while the high temperature in Las Vegas that day was 108 degrees.<sup>10</sup>

Heat-related dehydration and deaths will likely mount over time in the absence of serious intervention to increase public drinking water access. Climate change impacts are not merely hypothetical, as noted by Florida Republican Congressional Representative Carlos Curbelo: "We need to stop covering the debate and start covering the story, so that people see that this is real, and so that politicians take a more pragmatic approach and find solutions that are actually achievable."<sup>11</sup>

Even temporary dehydration may cause long-term negative health implications, according to a study published in the *Annals of Internal Medicine*.<sup>12</sup> The researchers studied heat stroke victims of a sustained 1995 heat wave that struck Chicago and killed more than 600 people; they found that more than a quarter of the patients died within a year and most had suffered permanent loss of ability to function independently.<sup>13</sup>

The sensation of thirst does not appear until the body is one or two percent dehydrated.<sup>14</sup> By then, dehydration is already starting to impact mental and physical performance.<sup>15</sup> Per one expert, "Dehydration affects all people, and staying properly hydrated is just as important for those who work all day at a computer as it is for marathon runners, who can lose up to eight

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<sup>8</sup> Tribune Media Wire. "Man Dies with 109-Degree Temperature at Las Vegas Music Festival." *WGN*, 20 June 2017, [wgntv.com/2017/06/20/man-dies-with-109-degree-temperature-at-las-vegas-music-festival/](http://wgntv.com/2017/06/20/man-dies-with-109-degree-temperature-at-las-vegas-music-festival/).

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> Rosane, Olivia. "NBC's Meet the Press Devotes Entire Show to Climate Change With No Time for Deniers." *EcoWatch*, 31 Dec. 2018, [www.ecowatch.com/meet-the-press-climate-change-2624807867.html](http://www.ecowatch.com/meet-the-press-climate-change-2624807867.html).

<sup>12</sup> Jane E. Dematte et al. "Near-Fatal Heat Stroke During the 1995 Heat Wave in Chicago." *Annals of Internal Medicine*, vol. 129, issue 3, 1 Aug. 1998, pp. 173-181, [annals.org/aim/article-abstract/711589/near-fatal-heat-stroke-during-1995-heat-wave-chicago?doi=10.7326%2f0003-4819-129-3-199808010-00001](http://annals.org/aim/article-abstract/711589/near-fatal-heat-stroke-during-1995-heat-wave-chicago?doi=10.7326%2f0003-4819-129-3-199808010-00001).

<sup>13</sup> *Id.*

<sup>14</sup> Steinhilber, Brianna. "What You Should Know About Drinking Water (But Probably Don't)." *NBC News*, 30 May 2017, [www.nbcnews.com/better/diet-fitness/down-low-h20-n760721](http://www.nbcnews.com/better/diet-fitness/down-low-h20-n760721).

<sup>15</sup> *Id.*

percent of their body weight as water when they compete.”<sup>16</sup> Thus, everyone—no matter what age, health condition, or activity level—needs sufficient water to survive and to thrive.

## **B. History of the Water Fountain**

One important marker of civilization is the implementation of engineering that frees citizens from the relentless task of securing water for daily use. Water delivery infrastructure made cities possible, even in locations lacking a natural water supply. Over time, the ability to deliver water across long distances improved, and treatment advances allowed for better quality water, leading to longer, healthier lives. Before potable water was available through home plumbing, public fountains served as the main source of drinking water. Many of these early fountains still exist and can be used in ancient cities such as Rome.<sup>17</sup>

The first free public water fountain of the modern age debuted in London in 1859.<sup>18</sup> The unveiling attracted thousands, and, at its peak, 7,000 people used the fountain each day.<sup>19</sup> Public fountains were a health breakthrough for London’s poor, who suffered from water-borne illnesses, like cholera and typhoid, caused by drinking water bottled from the sewage-infested Thames.<sup>20</sup> The fountain changed the course of public health by making clean water accessible at no cost.<sup>21</sup> By 1879, London had 800 fountains.<sup>22</sup> American cities followed London’s example. In 1859, New York introduced a fountain at City Hall Park. Detroit, Philadelphia and San Francisco soon followed.<sup>23</sup>

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<sup>16</sup> *Id.*

<sup>17</sup> “The Drinking Fountains of Rome.” *Explore Italian Culture*, [www.explore-italian-culture.com/drinking-fountains-of-rome.html](http://www.explore-italian-culture.com/drinking-fountains-of-rome.html). (Last accessed 15 July 2019.).

<sup>18</sup> Pierre-Louis, Kendra. “We Don’t Trust Drinking Fountains Anymore, and That’s Bad for Our Health.” *The Washington Post*, 8 July 2015, [www.washingtonpost.com/opinions/we-dont-trust-drinking-fountains-anymore-and-thats-bad-for-our-health/2015/07/02/24eca9bc-15f0-11e5-9ddc-e3353542100c\\_story.html?utm\\_term=.b4db485ce042](http://www.washingtonpost.com/opinions/we-dont-trust-drinking-fountains-anymore-and-thats-bad-for-our-health/2015/07/02/24eca9bc-15f0-11e5-9ddc-e3353542100c_story.html?utm_term=.b4db485ce042).

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

By 1920, most municipalities were providing free water disinfected by chlorination.<sup>24</sup> Chlorine protects drinking water from pathogens as the water makes the journey from treatment plants through pipes to both homes and drinking fountains. Chlorine is one of the most significant public health advancements of modern times.<sup>25</sup> The National Bureau of Economic Research attributes half of the decline in urban deaths between 1900 and 1940 to improvements in water quality.<sup>26</sup>

Drinking water fountains were installed across the U.S. in schools and parks as they were built, but—with ever-increasing promotion, sales, and consumption of bottled water—the common drinking fountain slowly became ignored. Maintenance budgets for fountains were replaced with bottled water vending machines. Years of neglect led to mistrust of public drinking fountains and, slowly, the fountains became invisible.

### C. History of Bottled Water

For purposes of this discussion, the most significant development in drinking water delivery following the fountain was the rise of bottled water.<sup>27</sup> Single-serve bottled water was relatively non-existent in the United States until Perrier introduced its drink to Americans in the 1980s with splashy ads.<sup>28</sup> By 1988, the French company controlled 80 percent of the imported water market in America.<sup>29</sup> In 1990, a random check in North Carolina revealed that Perrier water contained benzene at double and triple the levels deemed safe for consumption by the United States Environmental Protection Agency (EPA). Perrier announced a worldwide recall of

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<sup>24</sup> *Id.*

<sup>25</sup> Weatherup, Daryl. “Chlorine: Protecting Human Health for More than a Century.” *GreenBiz*, Nov. 14, 2016, [www.greenbiz.com/article/chlorine-protecting-human-health-more-century](http://www.greenbiz.com/article/chlorine-protecting-human-health-more-century). (Last accessed 15 July 2019.)

<sup>26</sup> Cutler, David M., and Grant Miller (May 2004). “The Role of Public Health Improvements in Health Advances: The 20<sup>th</sup> Century United States.” *National Bureau of Economic Research* (Working Paper No. 10511). [www.nber.org/papers/w10511](http://www.nber.org/papers/w10511).

<sup>27</sup> Royte, Elizabeth. *Bottlemania: How Water Went on Sale and Why We Bought It*. New York: Bloomsbury, 2008.

<sup>28</sup> *Id.*, p.32

<sup>29</sup> Greenhouse, Steven. “Perrier’s New American Assault.” *The New York Times*, 30 Oct. 1988, [www.nytimes.com/1988/10/30/business/perrier-s-new-american-assault.html](http://www.nytimes.com/1988/10/30/business/perrier-s-new-american-assault.html).

its product and bottled water sales tanked. Swiss company Nestlé bought the deflated Perrier company and began dominating the bottled water market in America and around the globe.<sup>30</sup>

Perrier had bottled its water in glass that was both easily recyclable and nonreactive to its contents.<sup>31</sup> However, it was the invention in 1989 of polyethylene terephthalate (PET) plastic and its use for single-serve water bottles that “revolutionized our industry,” observed Kim Jeffrey, President of Nestlé Waters of North America.<sup>32</sup>

Between 1990 and 1997, drinking water fountains fell victim to multi-million dollar marketing campaigns that successfully convinced Americans that bottled water was more sophisticated and superior to the water readily available from our taps—even a veritable fountain of youth. Evian, for example, has long used the slogan “Live Young.”<sup>33</sup> The advertising worked on a population receptive to commercial promises while lacking messages of support for public water utilities. Bottled water sales jumped from \$115 million to \$4 billion.<sup>34</sup> By 2017, the per capita American consumption of bottled water amounted to 42.1 gallons, second in the world only to Mexico, which had the highest per capita consumption of bottled water, amounting to 67.2 gallons.<sup>35</sup> The big difference: Mexico continues to struggle with delivering safe drinking water at the tap,<sup>36</sup> while a recent report on water quality in the United States concluded that the majority of the nation's water supply is reliable and of high quality.<sup>37</sup>

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<sup>30</sup> Royte, *supra* note 27, p.32

<sup>31</sup> “Nestlé Relaunches Perrier in Plastic Bottles.” *AdAge*, 1 May 2001, [adage.com/article/news/nestle-relaunches-perrier-plastic-bottles/15256/](http://adage.com/article/news/nestle-relaunches-perrier-plastic-bottles/15256/).

<sup>32</sup> Royte, *supra* note 27, p. 33. Plastic packaging reduced the risk of injury from broken glass and the weight of bottles, thereby reducing the cost of distributing bottled water. The invention of PET also coincided with the birth of plastic pollution as a worldwide phenomenon.

<sup>33</sup> “Evian Marketing Communications Case ‘Live Young.’” *YouTube*, 12 Dec. 2014, [www.youtube.com/watch?v=97PANf77Tx0](http://www.youtube.com/watch?v=97PANf77Tx0).

<sup>34</sup> Royte, *supra* note 27, p.33

<sup>35</sup> “Bottled Water Consumption Worldwide from 2007 to 2017 (in billion liters).” *Statista*, 3 June 2014, [www.statista.com/statistics/387255/global-bottled-water-consumption/](http://www.statista.com/statistics/387255/global-bottled-water-consumption/).

<sup>36</sup> Malkin, Elizabeth. “Bottled-Water Habit Keeps Tight Grip on Mexicans.” *The New York Times*, 16 July 2012, [www.nytimes.com/2012/07/17/world/americas/mexicans-struggle-to-kick-bottled-water-habit.html](http://www.nytimes.com/2012/07/17/world/americas/mexicans-struggle-to-kick-bottled-water-habit.html).

<sup>37</sup> This is not to discount the critical need to upgrade water systems in the U.S. with poor water quality. Generally, water systems in this country provide reliable and high-quality drinking water, and violations tend to be infrequent. However, in a given year, about seven to eight percent of community water systems report at least one health-based violation. While this rate is relatively low, improved compliance is needed to ensure safe drinking water nationwide. From 1993 to 2009, compliance with Safe Drinking Water Act (SDWA) health-based regulations ranged from 79 to 94 percent of the population served by community water systems. (Allaire, Maura et al. “National



In 2016, bottled water overtook soda as the most popular drink sold in America, with much of the bottled water sold by the same companies that made soda. The transition to bottling water was easy for soda companies, already experts at bottling, distributing, and marketing various liquid concoctions on a worldwide basis. Soda giants The Coca-Cola Company and PepsiCo shared more than one-quarter of bottled water revenue last year from their respective brands, Dasani and Aquafina, both of which are sourced from the municipal water supply. In other words, they bottle and sell tap water, the same tap water that should be accessible at public water fountains.<sup>38</sup>

While municipal water districts do not advertise their water, corporations market theirs. But based on blind taste tests by the media, most people prefer tap water over bottled water.<sup>39</sup> Furthermore, in a study conducted in the same manner as wine tastings and published in the *Journal of Wine Economics*, subjects performed no better than chance at either distinguishing tap from bottled water or matching expert descriptions to the bottled waters.<sup>40</sup>

Other than the soda brands, leaders in the U.S. market share include Nestlé Pure Life (sourced from groundwater) and then Smart Water (sourced from tap water) by Glaceau, a subsidiary of The Coca-Cola Company and pitched by Jennifer Aniston,<sup>41</sup> who is a part owner of the product.<sup>42</sup> Smart Water is the most expensive of these brands at a whopping 250,000 percent

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Trends in Drinking Water Quality Violations.” *Proceedings of the National Academy of Sciences*, vol. 115, no. 9, Dec. 2018, pp. 2078–2083, doi.org/10.1073/pnas.1719805115.)

<sup>38</sup> Fottrell, Quentin. “Would You Pay \$12 for ‘Raw’ Water?” *MarketWatch*, 25 Feb 2018, www.marketwatch.com/story/bottled-water-overtakes-soda-as-americas-no-1-drink-why-you-should-avoid-both-2017-03-10; “Aquafina to Say it Comes From Same Source as Tap Water.” *USA Today*, 2007. *ABC News*, abcnews.go.com/Business/aquafina-source-tap-water/story?id=3428260.

<sup>39</sup> Sevigny, Cassandra, “The Success of Bottled Water: The Hidden Costs Hurt Us and the Environment.” (2017). 181. *Undergraduate Theses and Professional Papers*. 181. scholarworks.umt.edu/utpp/181

<sup>40</sup> Capehart, Kevin W., and Elena C. Berg. “Fine Water: A Blind Taste Test.” *Journal of Wine Economics*, vol. 13, no. 1, Feb. 2018, pp. 20-24. *Cambridge Core*, doi.org/10.1017/jwe.2017.5.

<sup>41</sup> “Jennifer Aniston Invests in Smartwater.” *UPI*, 3 June 2007, www.upi.com/Jennifer-Aniston-invests-in-Smartwater/44981180889343/.

<sup>42</sup> “Bottled Water Consumption Worldwide from 2007 to 2017 (in billion liters).” *Supra*, note 35

markup over its tap water source.<sup>43</sup> Smart Water was identified by Foodwatch as “[t]he most audacious lie in food advertising in 2018.”<sup>44</sup>

Driven by a seemingly unquenchable desire for bottled water and the spread of an “on the go” culture,<sup>45</sup> one million plastic bottles are bought around the world every minute.<sup>46</sup> By 2021, more than half a trillion plastic bottles will be sold annually, creating an environmental crisis arguably as serious as climate change.<sup>47</sup>

#### **D. Movement Back to Fountains**

In an effort to reduce bottled water usage and to curb the resulting proliferation of plastic waste, a modern movement back to the public water fountain is bubbling.<sup>48</sup> Since the beginning of the 21st century, “water kiosks”—modern high-tech fountain stations with multiple spouts for refilling bottles—have begun to spread in some European countries.<sup>49</sup> In the United States, public policy is returning its focus to the water fountain, as in California where fountain water quality testing is required in schools under new legislation.<sup>50</sup>

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<sup>43</sup> Loper, Nick, “What Makes SmartWater Smart? Hint: It's Not the Water!” *Side Hustle Nation*, 25 Mar. 2013, [www.sidehustlenation.com/what-makes-smartwater-smart/](http://www.sidehustlenation.com/what-makes-smartwater-smart/).

<sup>44</sup> “Consumers Vote Coca-Cola's ‘Smartwater’ the Most Audacious Advertising Lie of the Year -Foodwatch Germany Protest at Company Headquarters in Berlin.” *Foodwatch*, 5 Dec. 2018, [www.foodwatch.org/en/press/consumers-vote-coca-colas-smartwater-the-most-audacious-advertising-lie-of-the-year-foodwatch-germany-protest-at-company-headquarters-in-berlin/](http://www.foodwatch.org/en/press/consumers-vote-coca-colas-smartwater-the-most-audacious-advertising-lie-of-the-year-foodwatch-germany-protest-at-company-headquarters-in-berlin/)

<sup>45</sup> Taylor, Matthew, and Sandra Laville. “A Million Bottles a Minute: World’s Plastic Binge ‘as Dangerous as Climate Change.’” *The Guardian*, 28 June 2017, [www.theguardian.com/environment/2017/jun/28/a-million-a-minute-worlds-plastic-bottle-binge-as-dangerous-as-climate-change](http://www.theguardian.com/environment/2017/jun/28/a-million-a-minute-worlds-plastic-bottle-binge-as-dangerous-as-climate-change).

<sup>46</sup> In the United States, over 13 percent of all respondents surveyed reported that they used bottled water as the primary source for drinking water, and 45.4 percent said they often used bottled water. (Hu, Zhihua et al. “Bottled Water: United States Consumers and Their Perceptions of Bottled Water Quality.” *International Journal of Environmental Research and Public Health*, v.8(2), Feb. 2011, doi: [10.3390/ijerph8020565](https://doi.org/10.3390/ijerph8020565).) If half the American population drinks just one bottled water a day, 165,000,000 plastic bottles are contributed to the waste stream every day.

<sup>47</sup> *Id.*

<sup>48</sup> See Petri S. Juuti et al. “Short Global History of Fountains.” *Water*, vol. 7, 2015, pp. 2314-2348 (2015), [www.mdpi.com/2073-4441/7/5/2314/pdf](http://www.mdpi.com/2073-4441/7/5/2314/pdf). The article notes: “These kiosks have met wide approval in Italy, from the public and municipal authorities alike, to the point that over the last ten years their number has gone from zero to over a thousand, especially in the northern and central parts of the country.”

<sup>49</sup> *Id.*

<sup>50</sup> Assem. Bill 746, 2017-2018 Reg. Sess. (Cal. 2017).

[leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB746](http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB746)

In 2010, the non-profit WeTap introduced its free WeTap smart phone application, the first of its kind, to help the public locate water fountains around the globe.<sup>51</sup> The application uses open source data contributed by the public to geotag, photograph, and rate fountains. It enables users to access directions to their nearest drinking fountain and to add new ones to the database, which, to date, contains over 35,000 drinking fountains.

Improved fountain design includes water bottle filling spigots so that water can be stored for later consumption. Some fountains even count the number of plastic water bottles avoided.<sup>52</sup> Filters can be installed both at fountains and home taps, although studies show this is unnecessary in the vast majority of cases; one recent analysis of two years of results from Los Angeles customers who requested water quality testing found 99.4% of samples were within safety standards,<sup>53</sup> and greater than 90 percent of the country's drinking water systems have been meeting EPA standards since 1982.<sup>54</sup> The Environmental Working Group offers a Water Filter Buying Guide to assist consumers with selecting a filter to address contaminants identified—even at safe levels—in community drinking water reports, or to address contamination from older plumbing. Filters must be changed periodically, and thus are not a permanent solution to premise plumbing concerns that can be solved with new plumbing.<sup>55</sup>

Refillable water bottles are increasingly popular. As of 2016, the global reusable water bottle market reached sales of \$7.6 billion and, by 2025, it is expected to expand to \$10.4 billion.<sup>56</sup> Pioneering this trend under the leadership of California's First Lady Maria Shriver, the 2008 Women's Conference worked with WeTap and provided 15,000 reusable water bottles to make the conference plastic bottle-free.<sup>57</sup> Shriver described the event as “a conference with a

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<sup>51</sup> WeTap Drinking Fountain Finder, Apple App Store, [itunes.apple.com/us/app/wetap-drinking-fountain-finder/id903424762?mt=8](https://itunes.apple.com/us/app/wetap-drinking-fountain-finder/id903424762?mt=8).

<sup>52</sup> “ezH2O Bottle Filling Stations.” *Elkay*, [www.elkay.com/drinking-solutions/bottle-filling-stations](http://www.elkay.com/drinking-solutions/bottle-filling-stations). (Last accessed 15 July 2019.)

<sup>53</sup> Auger-Velez, V. et al. (2019). “LA TAP: Evaluating the Customer Experience of Tap Water in Los Angeles.” California Policy Options 2019. p33, [escholarship.org/uc/item/3s39v38h](https://escholarship.org/uc/item/3s39v38h).

<sup>54</sup> Allaire, Maura et al. “National Trends in Drinking Water Quality Violations.” *Proceedings of the National Academy of Sciences*, 27 Feb. 2018, [www.pnas.org/content/115/9/2078](http://www.pnas.org/content/115/9/2078).

<sup>55</sup> “Updated Water Filter Buying Guide.” *Environmental Working Group*, [www.ewg.org/tapwater/water-filter-guide.php](http://www.ewg.org/tapwater/water-filter-guide.php). (Last accessed 15 July 2019.)

<sup>56</sup> “Reusable Water Bottles Market: Global Industry Analysis and Forecast 2017-2025.” *Transparency Market Research*, 2017, [www.transparencymarketresearch.com/reusable-water-bottles-market.html](http://www.transparencymarketresearch.com/reusable-water-bottles-market.html).

<sup>57</sup> “Team.” *WeTap*, [wetap.org/about/team/](http://wetap.org/about/team/). (Last accessed 15 July 2019).

conscience.”<sup>58</sup> WeTap installed a temporary filling station with five spigots that provided tap water from the Metropolitan Water District of Southern California.<sup>59</sup>

Currently, WeTap is working with The City of Los Angeles, Mayor Eric Garcetti and his Green New Deal, the Los Angeles Department of Water and Power, and the Los Angeles Department of Parks and Recreation to update and install hydration stations around the City of Los Angeles to make the city an “urban oasis” for public tap water access. On the 5<sup>th</sup> Annual Tap Water Day, which was celebrated on June 13, 2019 at the Los Angeles Department of Water and Power Headquarters, city officials and WeTap announced plans to install or refurbish 200 drinking water stations city-wide in advance of the 2028 Olympics for the enjoyment and health of all residents and visitors to the city, as part of LA’s Green New Deal.<sup>60</sup>

San Francisco International Airport (SFO) has banned the sale of plastic water bottles in all of its concessions starting on August 20, 2019; at the same time, it will facilitate tap water access by adding 100 new refill stations to serve the 58 million travelers that pass through the airport on an annual basis.<sup>61</sup> In praising SFO’s plan, The Los Angeles Times Editorial Staff suggests that it could serve as a model for Los Angeles International Airport (LAX), the fourth-busiest airport in the world, with 87.5 million travelers a year: “If it goes without a hitch, it would provide LAX and other public venues — including sports stadiums, college campuses and malls — with a road map to reining in the growing pile of single-use plastic without invoking the all-powerful curse of inconvenience.”<sup>62</sup>

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<sup>58</sup> “Maria Shriver Announces Her Women's Conference Lineup.” *Vanity Fair*, 24 Feb. 2016, [www.vanityfair.com/news/2008/07/maria-shriver-announces-her-womens-conference-lineup](http://www.vanityfair.com/news/2008/07/maria-shriver-announces-her-womens-conference-lineup).The

<sup>59</sup> Gibson, Zara. “Gov. Arnold Schwarzenegger Welcomes You to The Women's Conference 2008.” *The Women's Conference*, 11 July 2017, [www.californiawomen.org/gov-arnold-schwarzenegger-welcomes-womens-conference-2008/](http://www.californiawomen.org/gov-arnold-schwarzenegger-welcomes-womens-conference-2008/).

<sup>60</sup> “MEDIA ADVISORY: LADWP and City Leaders Celebrate Tap Water Day LA, Announce Plans to Install 200 Hydration Stations in Advance of 2028 Olympics.” *Los Angeles Department of Water & Power*, [www.ladwpnews.com/media-advisory-ladwp-and-city-leaders-celebrate-tap-water-day-la-announce-plans-to-install-200-hydration-stations-in-advance-of-2028-olympics/](http://www.ladwpnews.com/media-advisory-ladwp-and-city-leaders-celebrate-tap-water-day-la-announce-plans-to-install-200-hydration-stations-in-advance-of-2028-olympics/). (Last accessed 15 July 2019.)

<sup>61</sup> Editorial Board. “A Plastic Bottle Ban That's So Crazy It Just Might Work.” *Los Angeles Times*, 9 Aug. 2019, [www.latimes.com/opinion/story/2019-08-08/sfo-plastic-water-bottle-ban](http://www.latimes.com/opinion/story/2019-08-08/sfo-plastic-water-bottle-ban).

<sup>62</sup> *Id.*

On the other side of the country, New York City Mayor Bill de Blasio is working with S’well, a stainless steel reusable bottle brand, to displace single-use bottles by donating 320,000 reusable bottles to New York City public school students and promoting an associated education program called “Bring It.”<sup>63</sup> Mark Chambers, the head of the Mayor’s Office of Sustainability, sees “Bring It” as a way to change the demand side of the bottle equation: “By displacing single-use plastics, we’re limiting the resources that go into making them . . . [and] disconnecting ourselves from the fossil fuel industry that has gotten us into the problems we are facing.”<sup>64</sup>

And across the ocean, London is investing in 100 new refill stations to meet demand for plastic bottle-free public drinking water access.<sup>65</sup> Shirley Rodrigues, London’s Deputy Mayor for Environment and Energy, told *The Guardian*: “What consumers told us in our work on pilots was that they wanted to be able to refill their own bottles from fountains that were safe, accessible, visible – and working,” she said.<sup>66</sup> To ensure that the fountains continue functioning well into the future, the City of London negotiated a 25-year maintenance deal with Thames Water, the water utility.<sup>67</sup> London’s efforts, as well as those being undertaken in Los Angeles, San Francisco, and New York, serve as useful models for systematically promoting public tap drinking water and discouraging single-use plastic bottles.

### **III. THREATS TO PUBLIC HEALTH**

#### **A. Fear of Tap Water Threatens Public Health**

Misguided perception can lead to serious health consequences. When safe drinking water is not readily available—or perceived to be available—studies find that people increasingly

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<sup>63</sup> Barron, James. “320,000 High Schoolers to Get Free Water Bottles. The Goal? 54 Million Fewer Single-Use Drinks.” *The New York Times*, 23 Sept. 2018, [www.nytimes.com/2018/09/23/nyregion/swell-water-bottles-nyc-high-schools.html](http://www.nytimes.com/2018/09/23/nyregion/swell-water-bottles-nyc-high-schools.html).

<sup>64</sup> *Id.*

<sup>65</sup> Smithers, Rebecca. “Locations of 50 New London Drinking Water Fountains Revealed.” *The Guardian*, 18 July 2019, [www.theguardian.com/environment/2019/jul/18/locations-of-50-new-london-water-fountains-revealed](http://www.theguardian.com/environment/2019/jul/18/locations-of-50-new-london-water-fountains-revealed).

<sup>66</sup> *Id.*

<sup>67</sup> *Id.*

consume sugar-sweetened beverages.<sup>68</sup> In turn, these sugary beverages lead to tooth decay and obesity, which has reached epidemic proportions in the United States. For instance, California's Department of Education revealed that students entering fifth grade were more obese every year, and that this early obesity was not reversible within the school programs.<sup>69</sup>

The Center for Poverty Research at the University of California-Davis studied two low-income rural towns in California's Central Valley with histories of water monitoring violations.<sup>70</sup> In the households evaluated, the study's researchers found that 28 percent of children ages three to eight years old were obese, which is well above the national obesity rates for children ages two to five years old (8.4 percent) and children ages six to eleven years old (17.7 percent). Parents reported that 38.5 percent of their children drank sugar-sweetened beverages two and three times per week.<sup>71</sup> All mothers interviewed indicated that they avoided drinking tap water because of its unpleasant taste and appearance, and fears of contamination.<sup>72</sup>

While instances of contamination do rarely occur, such widespread fear is unfounded and may stem from conditions originating outside the United States. For instance, a national survey conducted by the Centers for Disease Control and Prevention (CDC) concluded that Hispanic Americans may come to the United States with a fear of public water systems that is rarely warranted in this country.<sup>73</sup> Failure to communicate the safety of tap water in the United States may be undermining public health in Hispanic families. According to this survey, Hispanics are

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<sup>68</sup> Consumption of artificially sweetened beverages is no substitute for tap water as numerous studies indicate that "diet beverages" also contribute to obesity. Davis, J N et al. "Consumption of Artificial Sweetened Beverages Associated with Adiposity and Increasing HbA1c in Hispanic Youth." *Clinical Obesity*, vol. 8, no. 9, Aug. 2018, pp. 236-243. Wiley-Blackwell Online Open, [www.ncbi.nlm.nih.gov/pmc/articles/PMC6055860/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6055860/); Lee, Bruce Y. "Is Lack Of Safe Drinking Water Linked To Obesity?" *Forbes*, 17 Jan. 2016, [www.forbes.com/sites/brucelee/2016/01/17/is-lack-of-safe-drinking-water-linked-to-obesity/#4b1d8f217e07](http://www.forbes.com/sites/brucelee/2016/01/17/is-lack-of-safe-drinking-water-linked-to-obesity/#4b1d8f217e07).

<sup>69</sup> Aryana, Melanie et al. "Obesity and Physical Fitness in California School Children." *American Heart Journal*, vol. 163, issue 2, Feb. 2012, pp. 302-312, [www.sciencedirect.com/science/article/pii/S0002870311008258?via%3Dihub](http://www.sciencedirect.com/science/article/pii/S0002870311008258?via%3Dihub).

<sup>70</sup> French, Caitlin et al. "Improving Water Quality in Immigrant Communities." *Center for Poverty Research*, [poverty.ucdavis.edu/policy-brief/improving-water-quality-rural-immigrant-communities](http://poverty.ucdavis.edu/policy-brief/improving-water-quality-rural-immigrant-communities). (Last accessed 15 July 2019.)

<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> Onufrak, Stephen J. et al. "The Relationship of Perceptions of Tap Water Safety with Intake of Sugar-Sweetened Beverages and Plain Water among US Adults." *Public Health Nutrition*, vol. 17, issue 1, Jan. 2014, pp. 179-185. *Cambridge Core*, [doi.org/10.1017/S1368980012004600](https://doi.org/10.1017/S1368980012004600).

almost twice as likely to drink less than a glass or bottle of water a day if they felt that their local tap water was not safe to drink.<sup>74</sup> Moreover, this survey revealed that Hispanics who mistrusted their local tap water were twice as likely to drink one or more sugar sweetened beverages a day.<sup>75</sup>

Studies of low-income populations in higher income countries found that simply promoting or increasing water consumption can reduce the incidence of obesity among children. For example, in elementary schools in low income neighborhoods in two German cities, an intervention that involved installing water fountains, providing each child with a reusable water bottle, and conducting water consumption promotions was associated with statistically significantly lower incidence of overweight children.<sup>76</sup> In four primary schools in low income, multi-ethnic neighborhoods in Rotterdam, Netherlands, a water campaign, which included promoting and providing free access to tap water, resulted in significantly lower consumption of sugar-sweetened beverages.<sup>77</sup>

Dental disease is the most common chronic disease among children and the leading cause of school absence: “more than half [of the children studied] have an active dental disease, with 5 percent consistently in need of urgent dental treatment.”<sup>78</sup> Tooth decay may be increasing due to bottled water: “It's not the water that's causing the decay . . . It's the lack of fluoride.”<sup>79</sup> A natural mineral, fluoride is an established way to prevent tooth decay.<sup>80</sup> Fluoride is absorbed

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<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> Muckelbauer, Rebecca et al. “Promotion and Provision of Drinking Water in Schools for Overweight Prevention: Randomized, Controlled Cluster Trial.” *Nutrition Today*, vol. 47, no. 45, July/Aug. 2012, S27-S34. *Nursing Center*, [www.nursingcenter.com/pdfjournal?AID=1411170&an=00017285-201207001-00008&Journal\\_ID=260871&Issue\\_ID=1411152](http://www.nursingcenter.com/pdfjournal?AID=1411170&an=00017285-201207001-00008&Journal_ID=260871&Issue_ID=1411152).

<sup>77</sup> van de Gaar, Vivian M et al. “Effects of an Intervention Aimed at Reducing the Intake of Sugar-Sweetened Beverages in Primary School Children: A Controlled Trial.” *International Journal of Behavioral Nutrition and Physical Activity*, 2014, 11:98. *U.S. National Library of Medicine*, [www.ncbi.nlm.nih.gov/pmc/articles/PMC4222660/pdf/s12966-014-0098-8.pdf](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4222660/pdf/s12966-014-0098-8.pdf).

<sup>78</sup> “Programs, Tooth Fairy Convention.” *The L.A. Trust*, [thelatruster.org/programs-landing-page-2/oral-health-initiative/tooth-fairy-convention/](http://thelatruster.org/programs-landing-page-2/oral-health-initiative/tooth-fairy-convention/). (Last accessed 15 July 2019.)

<sup>79</sup> “Bottled Water: Cause of Cavity Comeback?” *Delta Dental*, [www.deltadentalins.com/oral\\_health/bottledwater.html](http://www.deltadentalins.com/oral_health/bottledwater.html). (Last accessed 15 July 2019.)

<sup>80</sup> “Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States.” *Centers for Disease Control and Prevention*, [www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm). (Last accessed 15 July 2019.)

easily into tooth enamel, especially in children's growing teeth, and, once teeth are developed, fluoride makes the entire tooth structure more resistant to decay. The CDC recognizes water fluoridation one of the top ten public health achievements of the twentieth century.<sup>81</sup>

According to the American Dental Association, those who rely primarily on bottled water as their main source of drinking water lack the decay-preventive benefits of fluoride:

More than 70 years of scientific research has consistently shown that an optimal level of fluoride in community water is safe and effective in preventing tooth decay by at least 25 percent in both children and adults. Simply by drinking tap water, Americans can benefit from fluoride's cavity protection, whether they are at home, work or school.<sup>82</sup>

The World Dental Congress also recognizes the nexus between lack of fluoridation in bottled water and the sudden rise in tooth decay among children.<sup>83</sup>

## **B. Water Scarcity**

We live on a blue planet—roughly 2/3 of Earth is covered by water—but only 2.5 percent of that is fresh water.<sup>84</sup> As the global population increases and relies on this fixed amount of water for hydration (as well as agriculture, sanitation, and other necessities), proper care and management of the world's freshwater supply are crucial for humanity's survival. Water scarcity currently affects four out of every ten people in the world.<sup>85</sup> The situation is worsening due to population growth, urbanization, pollution of water resources, and the impact of climate change.

Since potable water is of finite supply, per capita use (the number of gallons per person per day) should be consciously conserved before mandatory limitations are required, as in drought-plagued South Africa. After years of trying to convince residents to conserve, South

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<sup>81</sup> "Ten Great Public Health Achievements." *Centers for Disease Control and Prevention*, [www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm). (Last accessed 15 July 2019.)

<sup>82</sup> "Fluoride in Water." *American Dental Association*, [www.ada.org/en/public-programs/advocating-for-the-public/fluoride-and-fluoridation](http://www.ada.org/en/public-programs/advocating-for-the-public/fluoride-and-fluoridation). (Last accessed 15 July 2019.)

<sup>83</sup> Smith, Michael. "Bottled Water Cited as Contributing to Cavity Comeback." *Medpage Today*, 19 Sept. 2005, [www.medpagetoday.com/primarycare/dentalhealth/1756](http://www.medpagetoday.com/primarycare/dentalhealth/1756).

<sup>84</sup> "Freshwater Crisis." *National Geographic*, [www.nationalgeographic.com/environment/freshwater/freshwater-crisis/](http://www.nationalgeographic.com/environment/freshwater/freshwater-crisis/). (Last accessed 15 July 2019.)

<sup>85</sup> "Water." *United Nations*, [www.un.org/en/sections/issues-depth/water/](http://www.un.org/en/sections/issues-depth/water/). (Last accessed 15 July 2019.)



Africa restricted water use to 50 liters per person per day.<sup>86</sup> (In 2016, average daily per capita use in California was 321 liters.) Households exceeding that limit face hefty fines or the installation of a home meter that shuts off their water once they reach the threshold.<sup>87</sup>

In order to conserve potable water in the United States, public awareness campaigns and education in schools should address the limited water supply and smart water use. For example, 30 to 60 percent of fresh water in American cities is wasted by watering lawns that provide no nutritional benefit.<sup>88</sup> The Metropolitan Water District of Southern California provides rebate programs for lawn removal, drought tolerant landscaping, and water efficient appliances.<sup>89</sup>

Water scarcity is not inevitable but heavily influenced by human behavior, social customs, institutions, and government policies. Scarcity is a policy-induced consequence of water resource mismanagement, according to the 2006 United Nations Development Programme (UNDP) Human Development Report.<sup>90</sup> The UNDP report states, “Clean, accessible water for all is an essential part of the world we want to live in and there is sufficient fresh water on the planet to achieve this.”<sup>91</sup> However, due to bad economics or poor infrastructure, millions of people including children die every year from diseases associated with inadequate water supply, sanitation and hygiene.”<sup>92</sup>

Much of America’s bottled water is sourced from drought-prone locations, like California. While the amount of water bottled for drinking purposes comprises a mere fraction of its other uses—for example, agriculture uses 80 percent of California’s water<sup>93</sup>—bottling water in a drought region is clearly not an environmentally sound practice. Arrowhead Water, a

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<sup>86</sup> Mahr, Krista. “How Cape Town Was Saved from Running Out of Water.” *The Guardian*, 4 May 2018, [www.theguardian.com/world/2018/may/04/back-from-the-brink-how-cape-town-cracked-its-water-crisis](http://www.theguardian.com/world/2018/may/04/back-from-the-brink-how-cape-town-cracked-its-water-crisis)

<sup>81</sup>*Id.*

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<sup>88</sup> Polycarpou, Lakis. “The Problem of Lawns.” *Columbia University Earth Institute*, 4 June 2010, [blogs.ei.columbia.edu/2010/06/04/the-problem-of-lawns/](http://blogs.ei.columbia.edu/2010/06/04/the-problem-of-lawns/); “Outdoor Water Use in the United States.” *Environmental Protection Agency*, Jan. 2017, [19january2017snapshot.epa.gov/www3/watersense/pubs/outdoor.html](http://19january2017snapshot.epa.gov/www3/watersense/pubs/outdoor.html).

<sup>89</sup> “Residential Rebates.” *SoCal WaterSmart*, [socialwatersmart.com/en/residential/](http://socialwatersmart.com/en/residential/). (Last accessed 15 July 2019.)

<sup>90</sup> “Human Development Report.” *United Nations Development Programme*, 2006, [hdr.undp.org/sites/default/files/reports/267/hdr06-complete.pdf](http://hdr.undp.org/sites/default/files/reports/267/hdr06-complete.pdf).

<sup>91</sup> *Id.*

<sup>92</sup> “Sustainable Development Goals, Goal 6: Ensure Access to Water and Sanitation for All.” *United Nations*, [www.un.org/sustainabledevelopment/water-and-sanitation/](http://www.un.org/sustainabledevelopment/water-and-sanitation/). (Last visited 15 July 2019.)

<sup>93</sup> “Agricultural Water Use Efficiency.” *California Department of Water Resources*, [water.ca.gov/Programs/Water-Use-And-Efficiency/Agricultural-Water-Use-Efficiency](http://water.ca.gov/Programs/Water-Use-And-Efficiency/Agricultural-Water-Use-Efficiency). (Last accessed 15 July 2019.)

brand of drinking water sold in the western United States, explains that the company has harvested water from California long before worries about water shortage ever arose. “You have to remember this is a 120-year-old brand,” said Jane Lazgin, a representative for Arrowhead. “Some of these sources have long, long been associated with the brand.” Lazgin acknowledges that, from an environmental perspective, “tap water is always the winner,” but says that the company tries to manage its springs sustainably.<sup>94</sup>

Allowing companies to profit by selling bottled water at a time when climate change and increased drought threaten global freshwater supply is a striking example of “The Tragedy of the Commons,” a theory developed by Garret Hardin in his seminal 1968 essay of the same name, first published in the journal *Science*.<sup>95</sup> Hardin argues that economic decisions made in the individual’s self-interest may lead to collective environmental ruin. Looking at an example from early 19th century agrarian England, Hardin’s essay considers herders grazing their sheep on a common parcel of land. While it may be in each herder’s own self interest to add an extra sheep or two, overgrazing inevitably leads to the depletion/destruction of the resources held in common, or “the commons”—and to the impoverishment of all.

This theory is beautifully illustrated in a fable about corporate greed by Theodore Geisel (a.k.a. Dr. Seuss) called *The Lorax* (1971).<sup>96</sup> In this well-known children’s book written at the dawn of the environmental movement, the “Once-ler” is the head of an irresponsible corporation plundering Truffula Trees to make “Thneeds,” a fictional product that nobody really needs. The Once-ler proceeds to make Thneeds without any regulation limiting his use of common resource. This short-sighted approach leads to complete despoliation of the environment, and the very last Truffula tree is chopped down. Like the Once-ler, corporations that profit from bottling fresh water, especially in drought-plagued regions, and wasting it in the bottling process, are acting in their own interest while depleting and threatening the common water supply for all.

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<sup>94</sup> Lurie, Julie. “Bottled Water Comes From the Most Drought-Ridden Places in the Country.” *Mother Jones*, 11 Aug. 2014, [www.motherjones.com/environment/2014/08/bottled-water-california-drought/](http://www.motherjones.com/environment/2014/08/bottled-water-california-drought/).

<sup>95</sup> Hardin, Garrett. “The Tragedy of the Commons.” *Science*, vol. 162, issue 3859, 13 Dec. 1968, pp. 1243-1248, [science.sciencemag.org/content/sci/162/3859/1243.full.pdf](http://science.sciencemag.org/content/sci/162/3859/1243.full.pdf).

<sup>96</sup> Ayers, Kyle. “The Environmental Message Behind 'The Lorax.'” *CBS New York*, 9 Apr. 2012, [newyork.cbslocal.com/2012/04/09/the-environmental-message-behind-the-lorax/](http://newyork.cbslocal.com/2012/04/09/the-environmental-message-behind-the-lorax/).

## C. Climate Change

Climate change poses significant threats to freshwater resources. Recently, the United Nations warned that global warming is on track to impose disastrous impacts if, by 2030, efforts are not taken to curtail its causes.<sup>97</sup> Extreme drought, wildfires, and floods are expected<sup>98</sup>—and with climate change causing drought in some regions and massive storms in others, it is expected that hundreds of millions of people will be displaced from their access to food and safe drinking water.<sup>99</sup>

As humans cannot survive for more than a few days without water—and even less time in extreme conditions—protecting this precious resource from fluctuations in supply is crucial. Only through careful planning and distribution will we be able to preserve enough water to care for the public. Furthermore, as more people flock to cities, urban public drinking water access becomes increasingly important. For example, every neighborhood in Los Angeles can expect, within 30 years, to experience a spike in extremely hot days where the temperature exceeds 95°F.<sup>100</sup> “L.A is one of the first cities to get its act together from its scientists all the way up to the mayor. No one knew precisely how to adapt to climate change because no one had the data until now. These are shocking numbers and we have it in us as a city to adapt if we are to survive.”<sup>101</sup>

The City of Los Angeles released its Green New Deal Report in 2019, with the introduction, “Our battle against climate change is a moral imperative, an environmental emergency, and an economic opportunity. Los Angeles is rising to the occasion with a plan that will lead the world toward a low-carbon, green-energy future.” In this report, WeTap is featured as a partner to the City of Los Angeles in its effort to meet climate change-related water challenges by providing tap water refill stations throughout the city.<sup>102</sup> Other local regions and

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<sup>97</sup> The Intergovernmental Panel on Climate Change. *Special Report: Global Warming of 1.5 Degrees Celsius*. Oct. 2018, [www.ipcc.ch/sr15/](http://www.ipcc.ch/sr15/).

<sup>98</sup> *Id.* at Section B: Projected Climate Change, Potential Impacts and Associated Risks

<sup>99</sup> *Id.*

<sup>100</sup> “Climate Change L.A., Temperature Study.” *KCET*, 12 Feb. 2014, [www.kcet.org/climate-change-la/temperature-study](http://www.kcet.org/climate-change-la/temperature-study).

<sup>101</sup> *Id.*

<sup>102</sup> “Green New Deal pLAn.” *WeTap*, 5 May 2019, [wetap.org/la-mayors-eric-garcettis-green-new-deal-plan/](http://wetap.org/la-mayors-eric-garcettis-green-new-deal-plan/).

civic institutions should follow suit and provide hydration stations, rather than forcing citizens to choose between dehydration and purchasing bottled beverages.

#### **D. Aging Infrastructure**

In order to keep Americans hydrated and healthy in the most economical and sustainable fashion, we must continue to invest in public water treatment and delivery. America's civil engineers provide a comprehensive assessment of the nation's 16 major infrastructure categories in the American Society of Civil Engineers (ASCE) Infrastructure Report Card. Using a simple A to F school report card format, the Report Card examines current infrastructure conditions and needs, assigning grades and making recommendations for improvement.

The ASCE's 2017 Infrastructure Report, which assigned the nation's drinking water infrastructure a D+ rating, underscores that America has serious work to do to keep our drinking water systems functioning well.<sup>103</sup> For decades, the U.S. has been a leader in water management. Now we're falling behind:

Drinking water is delivered via one million miles of pipes across the country. Many of those pipes were laid in the early to mid-20th century with a lifespan of 75 to 100 years. The quality of drinking water in the United States remains high, but legacy and emerging contaminants continue to require close attention. While water consumption is down, there are still an estimated 240,000 water main breaks per year in the United States, wasting over two trillion gallons of treated drinking water.<sup>104</sup>

According to the American Water Works Association, an estimated \$1 trillion is necessary to maintain and expand service to meet demands over the next 25 years.<sup>105</sup>

Along with analysis of infrastructure needs state by state, the report identifies general policy and funding recommendations to ensure that American water systems succeed.

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<sup>103</sup> American Society of Civil Engineers. *2017 Infrastructure Report Card*, [www.infrastructurereportcard.org](http://www.infrastructurereportcard.org).

<sup>104</sup> American Society of Civil Engineers. *2017 Infrastructure Report Card*, [www.infrastructurereportcard.org/wp-content/uploads/2017/01/Drinking-Water-Final.pdf](http://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Drinking-Water-Final.pdf).

<sup>105</sup> *Id.*

Investment in water infrastructure should enjoy bipartisan support. Delaying investment only escalates the costs and risks of an aging infrastructure system.<sup>106</sup>

At a recent conference at Columbia University's Water Center, several strategies were presented to bring America's water infrastructure grade up to excellence, including the following:<sup>107</sup>

**1) Create National-Level Governance.** Because water does not recognize municipal or state boundaries and pollution in one region's water impacts others, water should be managed with national policy. That is why many countries—including the U.K., Canada, Australia, and Mexico—have a national water authority or commission that oversees water management across the country. In the U.S., however, over 50,000 different municipalities manage our nation's water, with every single one operating on its own.<sup>108</sup> This lack of centralization makes it difficult to initiate and complete more ambitious, regional projects. Just as the U.S. has a Department of Energy at the federal cabinet position, so too should there be a Department of Water.

**2) Bigger Budget for Water Infrastructure.** The federal government spends only two percent of its GDP on infrastructure, and water infrastructure makes up just a part of that.<sup>109</sup> It is time that we devote a larger percentage of our GDP to delivering safe drinking water.

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<sup>106</sup> In Newark, New Jersey, for example, the city's mostly poor Black population is suffering from lead exposure, the result of old lead pipes. The installation of filters has done little to abate the problem. Mayor Ras Baraka has called on President Trump to help the city fix its lead problems by replacing the service lines—a \$70 million price tag—rather than building a border wall. (Fitzsimmons, Emma. "In Echo of Flint Lead Crisis, Newark Offers Bottled Water." *The New York Times*, 11 Aug. 2019, [www.nytimes.com/2019/08/11/nyregion/newark-water-lead.html?smid=nytcore-ios-share](http://www.nytimes.com/2019/08/11/nyregion/newark-water-lead.html?smid=nytcore-ios-share).)

<sup>107</sup> Fecht, Sarah. "America's Water Infrastructure is Failing – But Here's How We Could Start to Fix It." *Phys.Org*, 8 May 2018, [phys.org/news/2018-05-america-infrastructure-failingbut.html](http://phys.org/news/2018-05-america-infrastructure-failingbut.html).

<sup>108</sup> Gasson, Christopher. *Water Market USA*. Global Water Intelligence (2009), [www.globalwaterintel.com/client\\_media/uploaded/files/sample\\_water\\_market\\_USA.pdf](http://www.globalwaterintel.com/client_media/uploaded/files/sample_water_market_USA.pdf).

<sup>109</sup> Congressional Budget Office. *Federal Investment, 1962 to 2018* (June 2019), [www.cbo.gov/system/files/2019-06/55375-Federal\\_Investment.pdf](http://www.cbo.gov/system/files/2019-06/55375-Federal_Investment.pdf).

## E. Chemical and Biological Pathogens

While water quality in the U.S. remains high, our water resources are endangered by the ongoing failure to regulate chemicals in both manufacturing and commerce. These threats pertain to water regardless of how it is delivered, but bottling water in plastic creates water pollution through the entire lifecycle of the plastic and adds chemical contaminants into the water bottled through leaching. The United States missed an important opportunity to meaningfully regulate chemicals when it passed an anemic Toxic Substances Control Act (TSCA) that, in practice, provides little check on chemicals that enter the stream of commerce and infect our planet's streams, rivers, lakes, and oceans. The EPA's failures under the TSCA to protect citizens from dangerous chemicals has earned the TSCA program an assessment of High Risk by the Government Accounting Office in its annual report every year since 2009.<sup>110</sup>

Also, new methods of energy extraction like hydraulic fracturing, or fracking, which require the injection of chemicals into the ground, may significantly impact the world's supply of ground water. Developed by Halliburton in 1949 but not widely used until the last decade, fracking has dramatically increased fossil fuel production in America; it has also wasted and poisoned fresh water that could have been used for drinking.<sup>111</sup>

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<sup>110</sup> The Government Accounting Office provides the following Issue Summary:

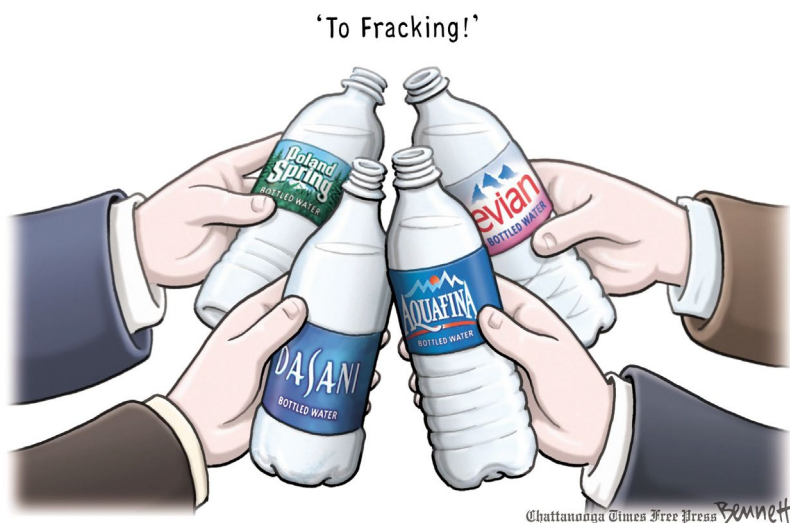
Tens of thousands of chemicals are currently in EPA's chemical inventory and an average of 1,500 new chemicals are introduced into commerce each year. EPA conducts chemical toxicity assessments under its Integrated Risk Information System (IRIS) program and is authorized under the Toxic Substances Control Act (TSCA) to obtain information on the risks of chemicals and control those it determines pose an unreasonable risk. Obtaining adequate scientific information on chemical toxicity and exposure levels and completing timely, credible chemical toxicity assessment have been long-standing challenges for EPA. Such assessments are the cornerstone of scientifically sound environmental decisions, policies, and regulations under a variety of environmental statutes, such as the Safe Drinking Water Act and the Clean Air Act. Because EPA had not developed sufficient chemical assessment information under these programs to limit exposure to many chemicals that may pose substantial health risks, we added this issue to the High Risk List in 2009.

"Toxic Chemicals, High Risk Issues." *U.S. Government Accounting Office*, [www.gao.gov/key\\_issues/toxic\\_chemicals/issue\\_summary](http://www.gao.gov/key_issues/toxic_chemicals/issue_summary). (Last accessed 15 July 2019.)

<sup>111</sup> "Fracturing." *Halliburton*, [www.halliburton.com/en-US/ps/stimulation/fracturing/default.html](http://www.halliburton.com/en-US/ps/stimulation/fracturing/default.html). (Last accessed 15 July 2019.)

The process involves the high-pressure injection of 'fracking fluid'—which is primarily water containing sand, plastic beads<sup>112</sup> or aluminum oxide, and other chemicals (that are not disclosed for proprietary reasons)—into a wellbore to create cracks in the deep-rock formations in order to release natural gas and petroleum. In 2016, hydraulically fractured horizontal wells accounted for 69 percent of all oil and natural gas wells drilled in the United States and 83 percent of the total linear footage drilled.<sup>113</sup>

Hydraulically fractured oil and gas production wells can be located near or within sources of drinking water. Between 2000 and 2013, approximately 3,900 public water systems were estimated to have had at least one hydraulically fractured well within one mile of their source; these public water systems served more than 8.6 million people year-round in 2013.<sup>114</sup>



Currently, fracking is exempt from a whole slate of important federal environmental laws, including the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery

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<sup>112</sup> “Petrochemical.” *Precision Plastic Ball*, [www.precisionplasticball.com/capabilities/petrochemical/](http://www.precisionplasticball.com/capabilities/petrochemical/). (Last accessed 15 July 2019.)

<sup>113</sup> “Hydraulically Fractured Horizontal Wells Account for Most New Oil and Natural Gas Wells.” *U.S. Energy Information Administration*, 30 Jan. 2018, [www.eia.gov/todayinenergy/detail.php?id=34732](http://www.eia.gov/todayinenergy/detail.php?id=34732).

<sup>114</sup> “Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water in the United States, Executive Summary.” *United States Environmental Protection Agency*, December 2016, [www.epa.gov/sites/production/files/2016-12/documents/hfdwa\\_executive\\_summary.pdf](http://www.epa.gov/sites/production/files/2016-12/documents/hfdwa_executive_summary.pdf).

Act (Superfund), and the Energy Planning and Right to Know Act.<sup>115</sup> Notably, when Congress passed the Energy Policy Act, it amended the SDWA in 2005 to exclude fracking from the definition of ‘underground injection,’ thereby exempting it from SDWA’s Underground Injection Control (UIC) program.<sup>116</sup> This exemption is commonly known as the “Halliburton loophole,”<sup>117</sup> and it effectively strips EPA of its regulatory power over fracking and water pollution resulting from the fracking process. A 2011 congressional report found that the 14 leading U.S. fracking companies collectively injected into the ground 10.2 million gallons of more than 650 liquids containing chemicals that are known or possible human carcinogens.<sup>118</sup> Both the unknown chemicals and the synergistic impacts of the total chemical load compounds our risk.<sup>119</sup>

Furthermore, the fracking process is becoming more water-intensive. According to a study by Duke University:

After more than a decade of fracking operation, we now have more years of data to draw upon from multiple verifiable sources. We clearly see a steady annual increase in hydraulic fracturing's water footprint, with 2014 and 2015 marking a turning point where water use and the generation of flowback and produced water began to increase at significantly higher rates.<sup>120</sup>

The Duke study models show that if current low oil and gas prices rise and production returns to levels seen during fracking's heyday in the early 2010s, cumulative water use and wastewater

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<sup>115</sup> “Natural Gas Explained, Natural Gas and the Environment.” *U.S. Energy Information Administration*, [www.eia.gov/energyexplained/?page=natural\\_gas\\_environment](http://www.eia.gov/energyexplained/?page=natural_gas_environment). (Last accessed 15 July 2019.)

<sup>116</sup> United States Environmental Protection Agency. “Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources, Executive Summary,” June 2015, EPA/600/R-15/047a, ES-6 DRAFT

<sup>117</sup> Tong, Scott, and Tom Scheck, “EPA’s Late Changes to Fracking Study Downplay Risk of Drinking Water Pollution.” *Marketplace*, 30 Nov. 2016, [www.marketplace.org/2016/11/29/world/epa-s-late-changes-fracking-study-portray-lower-pollution-risk](http://www.marketplace.org/2016/11/29/world/epa-s-late-changes-fracking-study-portray-lower-pollution-risk); Editorial Board. “The Halliburton Loophole.” *The New York Times*, 2 Nov. 2009, [www.nytimes.com/2009/11/03/opinion/03tue3.html](http://www.nytimes.com/2009/11/03/opinion/03tue3.html).

<sup>118</sup> United States, Congress, House, Committee on Energy and Commerce. *Chemicals Used in Hydraulic Fracturing*. Apr. 2011, [ecolo.org/documents/documents\\_in\\_english/gas-Hydraulic-Fract-chemicals-2011-report.pdf](http://ecolo.org/documents/documents_in_english/gas-Hydraulic-Fract-chemicals-2011-report.pdf).

<sup>119</sup> Governor Ron DeSantis of Florida (Republican) listed banning fracking in Florida amongst his first policy initiatives. “Governor Ron DeSantis Announces Major Water Policy Reforms.” *Florida Governor*, 10 Jan. 2019, [www.flgov.com/2019/01/10/governor-ron-desantis-announces-major-water-policy-reforms/](http://www.flgov.com/2019/01/10/governor-ron-desantis-announces-major-water-policy-reforms/).

<sup>120</sup> “Water Use for Fracking Has Risen by Up to 770 Percent Since 2011.” *Phys.Org*, 15 Aug. 2018, [phys.org/news/2018-08-fracking-risen-percent.html](http://phys.org/news/2018-08-fracking-risen-percent.html).



volumes could surge by up to 50-fold in unconventional gas-producing regions by 2030, and by up to 20-fold in unconventional oil-producing regions.<sup>121</sup> But "[e]ven if prices and drilling rates remain at current levels, our models still predict a large increase by 2030 in both water use and wastewater production," said Andrew J. Kondash, a Ph.D. student in Vengosh's lab who was lead author of the paper.<sup>122</sup>

Another chemical threat to America's drinking water supply is the ubiquitous class of polyfluoroalkyl and perfluoroalkyl substances, or PFAS.<sup>123</sup> PFAS are found in a wide range of everyday consumer products, including the lining of pizza boxes and other food packaging, nonstick cookware, and stain repellants—and they ultimately end up in our drinking water. These chemicals are notoriously persistent in the environment and human body. They do not break down, but instead bioaccumulate. Human health impacts include increased cholesterol, lower infant birth rates, immune system failure, cancer, and thyroid hormone disruption.<sup>124</sup> Moreover, additional synergistic impacts of these chemicals are as yet unknown.

For years, calls to regulate PFAS have been unsuccessful, and, last January, the Trump administration tried to block publication of a study urging a much lower threshold of exposure than that identified in the EPA guideline. The study,<sup>125</sup> which was performed by the federal Agency for Toxic Substances and Disease Registry and eventually released, suggested that the EPA's existing health advisory (an unenforceable standard) is inadequate to protect public health and should be much lower. Currently, the federal government does not regulate PFAS.

In Europe, the precautionary principle guiding the regulation of chemicals in commercial products is that chemicals are guilty until proven innocent. In America, the reverse is true—most chemicals face few hurdles before turning up in consumer goods. This industry-focused approach effectively means that consumers must face harm before remedial action is taken. And for those suffering exposure-related injuries, it is rare that they will be able to overcome the

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<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

<sup>123</sup> "Per- and Polyfluoroalkyl Substances (PFAS)." *United States Environmental Protection Agency*, [www.epa.gov/pfas](http://www.epa.gov/pfas). (Last accessed 15 July 2019.)

<sup>124</sup> "Per- and Polyfluoroalkyl Substances (PFAS) and Your Health." *Agency for Toxic Substances and Disease Registry*, [www.atsdr.cdc.gov/pfas/health-effects.html](http://www.atsdr.cdc.gov/pfas/health-effects.html). (Last accessed 15 July 2019.)

<sup>125</sup> "Toxicological Profile for Perfluoroalkyls. (Draft for Public Comment)." *Agency for Toxic Substances and Disease Registry*, 2018, [www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=1117&tid=237](http://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=1117&tid=237).

difficult legal threshold of establishing a direct causal connection between the chemicals at issue and their condition. Preventing the use of dangerous chemicals in the first place, before they enter our drinking water sources, should be a paramount legislative concern.

The most effective method of management is not by testing and regulating one chemical at a time—an endless task that cannot keep pace with the ever increasing number of chemicals in commerce—but through regulation of the six known classes of health-threatening chemicals, as identified by The Green Science Policy Institute.<sup>126</sup> Sadly, purity is now measured with acceptable limits of contaminants. And while the EPA requires consumer transparency when it comes to municipal water contaminants, the Food and Drug Administration (FDA) allows bottled water manufacturers to conceal any contaminants by listing water as the only ingredient.

While water treatment and filtration can control biological pathogens and chemicals, the bottling process itself may introduce them. In 2015, 14 brands of bottled water were recalled for *E. coli*.<sup>127</sup> Today, much of our drinking water is contaminated with microplastics.<sup>128</sup> But bottled water contains twice as much plastic contamination as tap water, presumably due to the plastic filaments created in the bottling process.<sup>129</sup> One study found that 93 percent of bottled water is contaminated by synthetic polymer.<sup>130</sup> Another recent study concluded that those who drink bottled water exclusively consume about 90,000 microplastic particles on an annual basis, compared to about 4,000 from tap water.<sup>131</sup> This difference is staggering, especially given how little we know about the human health impacts of ingesting microplastics.

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<sup>126</sup> “Six Classes.” *Green Science Policy Institute*, [greensciencepolicy.org/topics/six-classes/](https://greensciencepolicy.org/topics/six-classes/). (Last accessed 15 July 2019.)

<sup>127</sup> Brumfield, Ben, and Ann Colwell. “14 Brands of Bottled Water Recalled Due to Possible *E. coli*.” *CNN*, 23 June 2015, [www.cnn.com/2015/06/23/us/niagara-e-coli-bottled-water-recall/index.html](http://www.cnn.com/2015/06/23/us/niagara-e-coli-bottled-water-recall/index.html).

<sup>128</sup> The breakdown of plastic waste in our environment and plastic fibers from washing clothing made from synthetic materials is releasing plastic microfibers and microparticles into our drinking water sources.

<sup>129</sup> Readfern, Graham. “WHO Launches Health Review After Microplastics Found in 90 Percent of Bottled Water.” *The Guardian*, 15 March 2018, [www.theguardian.com/environment/2018/mar/15/microplastics-found-in-more-than-90-of-bottled-water-study-says](http://www.theguardian.com/environment/2018/mar/15/microplastics-found-in-more-than-90-of-bottled-water-study-says).

<sup>130</sup> Mason, Sherri A. et al. “Synthetic Polymer Contamination in Bottled Water.” *Frontiers in Chemistry*, 6:407, 11 Sept. 2018, doi:10.3389/fchem.2018.00407.

<sup>131</sup> Oaklander, Mandy. “Americans Eat and Inhale Over 70,000 Plastic Particles Each Year According to a New Analysis.” *Time Magazine*, 6 June 2019, [time.com/5601359/microplastics-in-food-air/](http://time.com/5601359/microplastics-in-food-air/).

## IV. THE PROBLEMS WITH BOTTLED WATER

### A. Plastic Pollution

Alarmed by the eight million tons of harmful plastic pollution entering our oceans every year, UN Secretary General António Guterres made a single and emphatic plea to humanity on World Environment Day in 2018: “Reject Single-Use Plastic.”<sup>132</sup>

Break Free From Plastic, an international movement, has helped to identify the source of single-use plastic entering our environment by brand, and it is no surprise that the main culprits are the top three water bottlers. Coca-Cola, PepsiCo, and Nestlé were the most frequent companies identified in 239 cleanups and brand audits spanning 42 countries and six continents—the most comprehensive snapshot of plastic polluting companies around the world.<sup>133</sup>

Over 187,000 pieces of plastic trash were audited, identifying thousands of brands whose packaging relies on the single-use plastics that pollute our oceans and waterways globally.<sup>134</sup> Coca-Cola was the top polluter in the global audit, with Coke-branded plastic pollution found in 40 of the 42 participating countries.<sup>135</sup> “These brand audits offer undeniable proof of the role that corporations play in perpetuating the global plastic pollution crisis,” said Global Coordinator of Break Free From Plastic, Von Hernandez. “By continuing to churn out problematic and unrecyclable throwaway plastic packaging for their products, these companies are guilty of trashing the planet on a massive scale. It’s time they own up and stop shifting the blame to citizens for their wasteful and polluting products.”<sup>136</sup>

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<sup>132</sup> “Secretary-General Calls for Beating Plastic Pollution, in World Environment Day Video Message.” *United Nations*, 5 June 2018, [www.un.org/press/en/2018/sgsm19070.doc.htm](http://www.un.org/press/en/2018/sgsm19070.doc.htm).

<sup>133</sup> Algado, Jed. “Coca-Cola, PepsiCo, and Nestlé Found to Be Worst Plastic Polluters Worldwide in Global Cleanups and Brand Audits.” *Break Free From Plastic*, 9 Oct. 2018, [www.breakfreefromplastic.org/2018/10/09/globalbrandauditreport/](http://www.breakfreefromplastic.org/2018/10/09/globalbrandauditreport/).

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> *Id.* Bottled water companies, facing increasing criticism of their contribution to plastic pollution, are reacting with a two-pronged plan of (1) searching for ways to increase recycled content in their packaging and (2) investing in alternatives to bottled water that allow them a slice of the profits on tap water without the plastic bottle. For example, PepsiCo, Inc. purchased SodaStream—a maker of countertop machines that carbonate tap water—saying the \$3.2 billion deal would help it go “beyond the bottle.” Pepsi is also selling reusable water bottles that come with capsules to add flavors and is testing hydration stations in the U.S. that dispense Aquafina-branded water in different

Public policy must require producer responsibility for the complete lifecycle of packaging and products that create environmental hazards. In "Stemming the Tide of Plastic Marine Litter," published in the *Tulane Environmental Law Journal's* Plastic Pollution Edition, UCLA scholars reviewed the universe of studies, policies, and international agreements relevant to the problem of plastic pollution and provided a suite of recommendations to achieve meaningful reductions in plastic marine litter.<sup>137</sup> The report's "Top 10" list of recommended actions includes a new international treaty with strong monitoring and enforcement mechanisms; domestic and local regulatory actions, such as bans of the most common and damaging types of plastic litter; and extended producer-responsibility programs.<sup>138</sup> As producers of plastic bottled water have failed to provide a take back and recycling program or to support municipal recycling, some cities,<sup>139</sup> public parks,<sup>140</sup> and universities<sup>141</sup> have banned or restricted the sale of plastic bottled water.<sup>142</sup>

Bottled water companies place responsibility for dealing with their single-use, non-biodegradable packaging on consumers, pointing to recycling as the solution to plastic pollution. At the same time, they have fought "bottle bills" that incentivize recycling with refundable

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flavors. (Chaudhuri, Saabira. "Plastic Water Bottles, Which Enabled a Drinks Boom, Now Threaten a Crisis." *The Wall Street Journal*, 12 Dec. 2018, [www.wsj.com/articles/bottled-water-americas-most-popular-drink-has-a-plastic-problem-11544627923](http://www.wsj.com/articles/bottled-water-americas-most-popular-drink-has-a-plastic-problem-11544627923).)

<sup>137</sup> Gold, Mark et al. "Stemming the Tide of Plastic Marine Litter: A Global Action Agenda." *Tulane Environmental Law Journal*, vol. 27, no. 2, 2014, pp. 165–203. *JSTOR*, [www.jstor.org/stable/43294162](http://www.jstor.org/stable/43294162).

<sup>138</sup> Gavel, Lauri. "UCLA Report Urges New Global Policy Effort to Tackle Crisis of Plastic Litter in Oceans." *UCLA Newsroom*, 29 Oct. 2013, [newsroom.ucla.edu/releases/ucla-report-identifies-legal-shortcomings-249108](http://newsroom.ucla.edu/releases/ucla-report-identifies-legal-shortcomings-249108).

<sup>139</sup> On March 11, 2014, the San Francisco Board of Supervisors passed Ordinance 28-14, which bans on city property the sale of plastic water bottles that contain less than 21 ounces. (Levin, Sam. "How San Francisco Is Leading the Way out of Bottled Water Culture." *The Guardian*, 28 June 2017, [www.theguardian.com/environment/2017/jun/28/how-san-francisco-is-leading-the-way-out-of-bottled-water-culture](http://www.theguardian.com/environment/2017/jun/28/how-san-francisco-is-leading-the-way-out-of-bottled-water-culture).)

<sup>140</sup> Glenza, Jessica. "National Park Ban Saved 2m Plastic Bottles—and Still Trump Reversed It." *The Guardian*, 26 Sept. 2017, [www.theguardian.com/environment/2017/sep/26/national-park-plastics-bottled-water-ban](http://www.theguardian.com/environment/2017/sep/26/national-park-plastics-bottled-water-ban).

<sup>141</sup> Keaggy, Diane Torioian. "Water Bottle Ban a Success; Bottled Beverage Sales Have Plummeted." *The Source*, 20 Apr. 2016, [source.wustl.edu/2016/04/water-bottle-ban-success-bottled-beverage-sales-plummeted/](http://source.wustl.edu/2016/04/water-bottle-ban-success-bottled-beverage-sales-plummeted/).

<sup>142</sup> "Plastic Beverage Containers." *Sierra Club*, [www.sierraclub.org/massachusetts/plastic-beverage-containers](http://www.sierraclub.org/massachusetts/plastic-beverage-containers). (Last accessed 18 July 2019.)

deposits on bottles at purchase, arguing that the deposits are tax on their product.<sup>143</sup> Between 1989 and 1994, the beverage industry spent \$14 million to defeat a national bottle bill.<sup>144</sup>

Coca-Cola sources just 7 percent of its plastic from recycled materials. Nestlé Waters North America reports that 6 percent of its bottles are made from recycled plastic. PepsiCo declines to share a percentage. A recent Greenpeace report found six of the largest soft drinks companies, excluding Coca-Cola, use a combined average of just 6.6 percent recycled plastic globally.<sup>145</sup> “Rather than being recycled into new bottles, the vast majority of beverage bottles are exported to plastic manufacturers in emerging markets and used to make synthetic fabrics for clothing...as well as carpeting, bags, packaging, and straps for shipping boxes.”<sup>146</sup>

Unlike metals or glass, nearly all plastics become fill or fluff or other stuff—as opposed to being recycled in a circular process—and will eventually end up in landfill or the environment. Almost every drink we purchase is packaged in entirely new plastic made from fossil fuels, a trend aided by the recent drop in oil prices, making new plastic cheaper than recycled material. For bottled water companies, future growth relies on producing more disposable bottles that feed a growing volume of plastic pollution around the world. The demand for more plastic is being met by fossil fuel companies with new facilities in the United States that are expected to fuel a 40 percent rise in plastic production in the next decade.<sup>147</sup>

The United States’ interest in continuing plastic production thwarted efforts at the UN Environmental Assembly in Nairobi in March 2019 to come up with an international plan to limit plastic pollution.<sup>148</sup> “The United States...spent two weeks in Nairobi watering down the

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<sup>143</sup> Coleman, Clayton. “Bottle Bills and Curbside Collection: An Overview of Recycling Policy Approaches.” *EESI—Environmental and Energy Study Institute*, 21 Sept. 2018, [www.eesi.org/articles/view/bottle-bills-and-curbside-collection-an-overview-of-recycling-policy-approa](http://www.eesi.org/articles/view/bottle-bills-and-curbside-collection-an-overview-of-recycling-policy-approa).

<sup>144</sup> Wilkins, Matt. “More Recycling Won’t Solve Plastic Pollution.” *Scientific American Blog Network*, 6 July 2018, [blogs.scientificamerican.com/observations/more-recycling-wont-solve-plastic-pollution/](https://blogs.scientificamerican.com/observations/more-recycling-wont-solve-plastic-pollution/).

<sup>145</sup> Greenpeace. *Bottling It: The Failure of Major Soft Drinks Companies to Address Ocean Plastic Pollution*. [Storage.googleapis.com/gpubk-static/legacy/Bottling-It\\_FINAL.pdf](https://storage.googleapis.com/gpubk-static/legacy/Bottling-It_FINAL.pdf). (Last accessed 15 July 2019.)

<sup>146</sup> Wong, Vanessa. “Almost No Plastic Bottles Get Recycled Into New Bottles.” *CNBC News*, 24 Apr. 2017, [www.cnb.com/2017/04/24/almost-no-plastic-bottles-get-recycled-into-new-bottles.html](http://www.cnb.com/2017/04/24/almost-no-plastic-bottles-get-recycled-into-new-bottles.html).

<sup>147</sup> Taylor, Matthew. “\$180bn Investment in Plastic Factories Feeds Global Packaging Binge.” *The Guardian*, 26 Dec. 2017, [www.theguardian.com/environment/2017/dec/26/180bn-investment-in-plastic-factories-feeds-global-packaging-binge](http://www.theguardian.com/environment/2017/dec/26/180bn-investment-in-plastic-factories-feeds-global-packaging-binge).

<sup>148</sup> The European Union, on the other hand—which recycles just a quarter of the 25 million tonnes of plastic waste it produces each year—voted in 2018 to require EU states to recycle 90 percent of plastic bottles by 2025 and to

proposals before finally signaling its rejection of the declaration on the final day.”<sup>149</sup> EPA Administrator Andrew Wheeler, a climate change denier and former coal industry lobbyist,<sup>150</sup> cited one widely quoted study that identified China as the largest direct source of marine plastics litter, with Indonesia also being a significant contributor. Wheeler said it would be wrong to focus exclusively on single-use plastic, at the expense of dealing with waste management issues.<sup>151</sup> However, Wheeler’s attempts to shift focus onto Asia for the plastic pollution crisis was rebuffed by environmental advocates who note that the United States produces the single use plastics, plastic packaging, and plastic waste that is burdening Asian countries.<sup>152</sup> “The United States is very, very beholden to industry interests,” said Christopher Chin, Executive Director of the San Francisco-based Center for Oceanic Awareness, Research and Education.<sup>153</sup>

“We could be locking in decades of expanded plastics production at precisely the time the world is realizing we should use far less of it,” said Carroll Muffett, President and CEO of the Center for International Environmental Law. “Around 99 percent of the feedstock for plastics is fossil fuels, so we are looking at the same companies, like Exxon and Shell, that have helped create the climate crisis. There is a deep and pervasive relationship between oil and gas companies and plastics.”<sup>154</sup>

A report published by *The Los Angeles Times* points to the growing popularity of electric cars, as well as vehicles with more fuel-efficient combustion engines, to explain why oil giants have been facing reduced revenue. And now, these fossil fuel titans may be making an untimely

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force producers to pay for waste management. The hope is that recycled plastics will become cheaper, especially in the wake of China’s decision to stop importing waste and with growing awareness about plastic pollution in the oceans. (de Carbonnel, Alissa. “EU Lawmakers Move to Ban Throw-Away Plastics.” *Reuters*, Oct. 24, 2018, [www.reuters.com/article/us-europe-environment-plastics/eu-lawmakers-move-to-ban-throw-away-plastics-idUSKCN1MY1KJ](http://www.reuters.com/article/us-europe-environment-plastics/eu-lawmakers-move-to-ban-throw-away-plastics-idUSKCN1MY1KJ).)

<sup>149</sup> Denyer, Simon. “G-20 Urges ‘Voluntary Action’ on Marine Plastic Crisis but Fails to Agree on Common Approach.” *The Washington Post*, 16 June 2019, [www.washingtonpost.com/world/g-20-urges-voluntary-action-on-marine-plastic-crisis-but-fails-to-agree-on-common-approach/2019/06/16/ddb3c3fc-7651-11e9-a7bf-c8a43b84ee31\\_story.html?utm\\_term=.0f10316d286b](http://www.washingtonpost.com/world/g-20-urges-voluntary-action-on-marine-plastic-crisis-but-fails-to-agree-on-common-approach/2019/06/16/ddb3c3fc-7651-11e9-a7bf-c8a43b84ee31_story.html?utm_term=.0f10316d286b).

<sup>150</sup> Turrentine, Jeff. “Who Is Andrew Wheeler? (And Why You Should Be Afraid of Him).” *Natural Resources Defense Council*, 31 May 2019, [www.nrdc.org/onearth/who-andrew-wheeler-and-why-you-should-be-afraid-him](http://www.nrdc.org/onearth/who-andrew-wheeler-and-why-you-should-be-afraid-him).

<sup>151</sup> Denyer, Simon. “G-20 Urges ‘Voluntary Action’ on Marine Plastic Crisis but Fails to Agree on Common Approach.” *Supra*, note 149

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*

<sup>154</sup> Taylor, Matthew. “\$180bn Investment in Plastic Factories Feeds Global Packaging Binge.” *Supra*, note 147

bet on plastics to boost their bottom line: “[the] global crackdown on plastic trash threatens to take a big chunk out of demand growth just as oil companies . . . sink billions of dollars into plastic and chemical assets.”<sup>155</sup>

“[C]onsultants and analysts are sounding the alarm that petrochemical demand is heading south of earlier forecasts. Images of waste fouling the oceans are drawing government bans on single-use plastics from the European Union to India and California<sup>156</sup> . . . With more investment in waste recovery, recycled resins could replace almost a third of virgin plastic by 2030 and nearly 60 percent by 2050, slashing demand for petrochemicals. . . It adds some uncertainty from a demand standpoint as the oil industry is looking for more and more chemicals for diversification.”<sup>157</sup>

Even Canada, home to the tar fields producing the dirtiest fuel on earth,<sup>158</sup> is taking aim at single-use plastics.<sup>159</sup> *The Washington Post* reports:

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<sup>155</sup> Kaskey, Jack. “Oil Giants' Untimely Bet on Plastic.” *Los Angeles Times*, 9 June 2019.

<sup>156</sup> The Los Angeles Times Editorial Board recently had this to say about a proposed California law aimed at reducing plastic pollution:

SB 54 by Sen. Ben Allen (D-Santa Monica) and its Assembly companion bill, AB 1080 by Assemblywoman Lorena Gonzalez (D-San Diego), would establish the groundbreaking California Circular Economy and Plastic Pollution Reduction Act, a law with a complicated name but a simple goal: slashing all single-use plastic waste in California by 75 percent over the next decade.

If we want to stop covering the Earth in discarded plastic trash before the end of the century, we’re going to have to stop addressing the problem with minuscule, penny-ante policies.

In its current form, the proposed law requires manufacturers of any kind of disposable plastic — mainly product packaging — to achieve a 20 percent recycling rate by 2024, gradually increasing to a 75 percent rate by 2030. This sounds like a low initial bar, but the reality is that many plastics are virtually unrecyclable, and beyond that, the market for recyclables has contracted dramatically. So the practical effect of the law is that many manufacturers would have to invest significantly in equipment, facilities and programs to increase their recycling rate — or their product couldn’t be sold in California.

Editorial Board. “California Has to Get Tough on Plastic Trash.” *The Los Angeles Times*, 9 June 2019.

<sup>157</sup> Kaskey, Jack. “The Backlash to Plastic Has Oil Companies Worried.” *BNN Bloomberg*, 5 June 2019, [www.bnnbloomberg.ca/the-backlash-to-plastic-has-oil-companies-worried-1.1268809](http://www.bnnbloomberg.ca/the-backlash-to-plastic-has-oil-companies-worried-1.1268809).

<sup>158</sup> “Tar Sands: Dirtiest Fuel in the World.” *Public Citizen*, [www.citizen.org/article/tar-sands-dirtiest-fuel-in-the-world/](http://www.citizen.org/article/tar-sands-dirtiest-fuel-in-the-world/). (Last accessed 15 July 2019.)

<sup>159</sup> Coletta, Amanda. “Trudeau Announces Canadian Ban on ‘Harmful’ Single-Use Plastics.” *The Washington Post*, 10 June 2019, [www.washingtonpost.com/world/trudeau-announces-canadian-ban-on-harmful-single-use-plastics/2019/06/10/54000420-8bb6-11e9-adf3-f70f78c156e8\\_story.html?utm\\_term=.57c2566fe876](http://www.washingtonpost.com/world/trudeau-announces-canadian-ban-on-harmful-single-use-plastics/2019/06/10/54000420-8bb6-11e9-adf3-f70f78c156e8_story.html?utm_term=.57c2566fe876).

Canada is taking steps to ban “harmful” single-use plastics by 2021, Prime Minister Justin Trudeau announced Monday, making the country the latest to join a growing movement around the world to halt the use of materials deemed damaging to the planet.

Speaking at a nature reserve in Mont Saint-Hilaire, Quebec, Trudeau said that while an exact list of items that will be covered by the ban has not been determined, it will be “grounded in science.”

“You’ve all heard the stories and seen the photos, and to be honest, as a dad, it’s tough trying to explain this to my kids,” Trudeau said. “How do you explain dead whales washing up on beaches around the world, their stomachs jam-packed with plastic bags?”<sup>160</sup>

Significant energy is required to manufacture, fill, and refrigerate plastic bottles of water. Fuel, typically petro-diesel, is used to transport bottles to retail stores and supermarkets. The combined energy costs of bottling water are 1,000 times greater than that required to pump, treat, and deliver tap water.<sup>161</sup> Bottling water also wastes it; the bottling process uses three times the amount of water than actually ends up in the bottle itself. Coca-Cola bottling plants, which produce the company’s bottled-water brand Dasani, use 1.63 liters of water for every 1 liter of beverage produced in California.<sup>162</sup> According to Coca-Cola, “Our California facilities continue to seek ways to reduce overall water use”<sup>163</sup>—without questioning the wisdom of its wasteful process, especially in a drought-prone state.

Bottling water in plastic creates permanent trash that is filling our environment. Instead of landfills, our oceans have become our planet’s biggest plastic waste dumps. Plastic bottles are the third most common item found on beaches around the globe on International Coastal Cleanup

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<sup>160</sup> *Id.*

<sup>161</sup> Gleick, Peter. *Bottled and Sold: The Story Behind Our Obsession with Bottled Water*. Washington, D.C.: Island Press, 2010.

<sup>162</sup> Lurie, Julie. “Bottled Water Comes From the Most Drought-Ridden Places in the Country.” *Supra*, note 94

<sup>163</sup> *Id.*



Day, as documented by Ocean Conservancy.<sup>164</sup> If the current usage rate of plastic continues, by 2050 more plastic is expected in the earth's oceans than fish in terms of weight.<sup>165</sup> Researchers have found plastic bottles on the most remote ocean floors, with the deepest parts of our oceans likely collecting the majority of plastic.<sup>166</sup> In Greenland's deep sea region, researchers found at—depths of more than 18,000 feet—as much as 3,400 pieces of microplastic in one liter of water.<sup>167</sup>

Research shows that this plastic in the ocean's deepest crevasses are being consumed by marine life.<sup>168</sup> A newly published study finds, for the first time, that the creatures living in the deepest, most remote environs on Earth are eating plastic in startling amounts.<sup>169</sup> Tiny shrimp-like crustaceans that scavenge on the seabed were collected from six of the world's deepest ocean trenches for analysis; 80 percent of these amphipods had plastic fibers and particles in their digestive systems, known as the hindgut.

The deeper the trench, the more fibers were found. In the Mariana Trench, the world's deepest trench located seven miles beneath the waves of the western Pacific, scientists found fibers in 100 percent of the samples—in every single amphipod collected. Prior studies of plastic particles ingested by marine organisms caught near the surface have found far smaller percentages. The lead researcher states:

This is not a one-off find. The Pacific Ocean covers half the planet. Our study sites were off Japan and Peru and Chile in places separated by thousands of miles. We can now say with confidence that plastic is everywhere. Let's not waste our time

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<sup>164</sup> “First Time in Over Three Decades Plastics Sweep Top Ten List of Items Collected During Ocean Conservancy's International Cleanup Day.” *Ocean Conservancy*, 27 June 2018, [oceanconservancy.org/news/first-time-three-decades-plastics-sweep-top-ten-list-items-collected-ocean-conservancys-international-coastal-cleanup/](https://oceanconservancy.org/news/first-time-three-decades-plastics-sweep-top-ten-list-items-collected-ocean-conservancys-international-coastal-cleanup/).

<sup>165</sup> “The New Plastics Economy: Rethinking the Future of Plastics.” *Ellen MacArthur Foundation*, 19 Jan. 2016, [www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics](https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics).

<sup>166</sup> Chiba, Sanae et al. “Human Footprint in the Abyss: 30 Year Records of Deep-Sea Plastic Debris.” *Marine Policy*, vol. 96, Oct. 2018, pp. 204–212. *Science Direct*, doi.org/10.1016/j.marpol.2018.03.022.

<sup>167</sup> Gibbens, Sarah. “Microplastics Found to Permeate the Ocean's Deepest Points.” *National Geographic*, 6 Dec. 2018, [www.nationalgeographic.com/environment/2018/12/microplastic-pollution-is-found-in-deep-sea/](https://www.nationalgeographic.com/environment/2018/12/microplastic-pollution-is-found-in-deep-sea/).

<sup>168</sup> Gibbens, Sarah, and Laura Parker. “Creatures in the Deepest Trenches of the Sea are Eating Plastic.” *National Geographic*, 28 Feb. 2019, [www.nationalgeographic.com/environment/2019/02/deep-sea-creatures-mariana-trench-eat-plastic/](https://www.nationalgeographic.com/environment/2019/02/deep-sea-creatures-mariana-trench-eat-plastic/).

<sup>169</sup> *Id.*

looking for more. Let's concentrate our efforts on what it is actually doing.<sup>170</sup> Sun exposure at the surface, coupled with the shredding power of underwater oceanic forces, break down plastic goods, resulting in microplastics. Reports of a “trash island” in the ocean—suggesting that plastic pollution has accumulated at the surface and can be cleaned up—are inaccurate; the reality is more akin to a “plastic smog.”<sup>171</sup> This term helps explain why reduction at the source (known as point source control)—like air pollution reduction strategies that target emissions from a factory’s smoke stack or a vehicle’s exhaust pipe—is the required solution for aquatic pollution. Once the petrochemicals leave the smoke stack or the storm drain, they become enmeshed with the environment down to the microscopic level and the process is irreversible. In fact, plastic is so ubiquitous in nature that it has become part of the water cycle. A recent United States Geological Survey study reports that multicolored plastic fibers have been found in rainwater.<sup>172</sup> And scientists have found plastic microparticles in the freshly fallen snow of the seemingly pristine Arctic—proving that plastic particles, just like other pollutants, have become a form of air pollution carried over long distances to the most remote terrestrial regions on the planet.<sup>173</sup>

As a result, microplastic has entered our food chain.<sup>174</sup> Just as whales and other large oceanic creatures are found dead with bellies full of plastic waste,<sup>175</sup> smaller creatures—from those in the deepest recesses of the ocean<sup>176</sup> to the fish we regularly consume—ingest smaller

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<sup>170</sup> *Id.*

<sup>171</sup> Eriksen, Marcus. “The Age of Plastic Smog: Charting a Future for our Oceans and Ourselves.” *The Explorers Journal*, [static1.squarespace.com/static/5522e85be4b0b65a7c78ac96/t/5aa3072bc830258399bf5ed6/1520633646473/Eriksen+Plastic+Smog.pdf](https://static1.squarespace.com/static/5522e85be4b0b65a7c78ac96/t/5aa3072bc830258399bf5ed6/1520633646473/Eriksen+Plastic+Smog.pdf).

<sup>172</sup> Weatherbee, Gregory et al. *It’s Raining Plastic: U.S. Geological Survey Open-File Report 2019-1048*, [doi.org/10.3133/ofr20191048](https://doi.org/10.3133/ofr20191048).

<sup>173</sup> Bergmann, Melanie, et al. “White and Wonderful? Microplastics Prevail in Snow from the Alps to the Arctic.” *Science Advances*, American Association for the Advancement of Science, 1 Aug. 2019, [advances.sciencemag.org/content/5/8/eaax1157](https://advances.sciencemag.org/content/5/8/eaax1157).

<sup>174</sup> Rochman, Chelsea M. et al. “Anthropogenic Debris in Seafood: Plastic Debris and Fibers from Textiles in Fish and Bivalves Sold for Human Consumption.” *Scientific Reports* 5, article no. 14340, 2015. *Nature*, [www.nature.com/articles/srep14340](https://www.nature.com/articles/srep14340).

<sup>175</sup> Hickok, Kimberly. “Found, Inside Dead Sperm Whale: 100 Plastic Cups, 4 Plastic Bottles, 25 Plastic Bags, 2 Flip-Flops.” *LiveScience*, 21 Nov. 2018, [www.livescience.com/64139-sperm-whale-full-of-plastic.html](https://www.livescience.com/64139-sperm-whale-full-of-plastic.html).

<sup>176</sup> Gibbens, Sarah, and Laura Parker. “Creatures in the Deepest Trenches of the Sea Are Eating Plastic.” *Supra*, note 168

bits of plastic and plankton-sized microplastics. Thus, when humans eat seafood, it often comes with a side of chemical-laden plastic waste. In fact, a new study indicates that we are consuming about 2,000 microplastic particles—equivalent to five grams or the size of a credit card—on a weekly basis.<sup>177</sup>

To make matters worse, oceanic plastic contains endocrine disrupting additives that, when consumed, may be hazardous to both marine life and humans.<sup>178</sup> Ocean plastic magnifies the surrounding pollution in the water due to its oleophilic characteristics, attracting oily chemicals such as PCBs, DDT, and petroleum: “Such chemicals are hard to dissolve in water but are soluble to oil and fat. Plastic is made from petroleum, which means it’s a form of solid oil.”<sup>179</sup>

In addition to posing serious risks to marine life and human health, plastic waste is a key contributor to greenhouse gas emissions. In 2018, a groundbreaking study revealed that plastic in the environment releases methane and ethylene, two powerful greenhouse gases that exacerbate climate change.<sup>180</sup> Manufacturing of plastic from petrochemicals already contributes to pollution and climate change, but this study establishes that plastic waste is also contributing to a rise in the earth’s surface temperature as the plastic ages in the environment—exacerbating drought and further threatening water security.

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<sup>177</sup> Gerretson, Isabelle. “You Could Be Swallowing a Credit Card’s Weight in Plastic Every Week,” *CNN*, 17 June 2019, [www.cnn.com/2019/06/11/health/microplastics-ingestion-wwf-study-scen-intl/index.html](http://www.cnn.com/2019/06/11/health/microplastics-ingestion-wwf-study-scen-intl/index.html).

<sup>178</sup> Gallo, Frederic et al. “Marine Litter Plastics and Microplastics and Their Toxic Chemicals Components: The Need For Urgent Preventive Measures.” *Environmental Sciences Europe*, 18 April 2018, 30:13. *Springer Open*, [enveurope.springeropen.com/articles/10.1186/s12302-018-0139-z](http://enveurope.springeropen.com/articles/10.1186/s12302-018-0139-z).

<sup>179</sup> Otake, Tomoko. “Plastic Debris in Oceans a Growing Hazard as Toxins Climb the Food Chain.” *Japan Times*, 19 July 2016, [www.japantimes.co.jp/news/2016/07/19/reference/plastic-debris-oceans-growing-hazard-toxins-climb-food-chain/#.XS1W3JNKjys](http://www.japantimes.co.jp/news/2016/07/19/reference/plastic-debris-oceans-growing-hazard-toxins-climb-food-chain/#.XS1W3JNKjys).

<sup>180</sup> Royer, Sarah-Jeanne et al. “Production of Methane and Ethylene from Plastic in the Environment.” *PLOS ONE*, Public Library of Science, 1 Aug. 2018, [journals.plos.org/plosone/article?id=10.1371/journal.pone.0200574](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200574).

## B. Birth Defects, Cancer, Obesity, and Other Diseases

Plastic bottles that sit in heat or sunlight, stored for example in a car parked outside or in a long-haul truck delivering bottled water from manufacturers to retailers, leach chemicals<sup>181</sup> into their contents:

When you heat things up, the molecules jiggle around faster and that makes them escape from one phase into another. So the plastic leaches its component chemicals out into the water much faster and more with heat applied to it. It's kind of like when you put mint leaves in your tea. The heat extracts the mint-tasting molecules and it happens faster in hot tea than it does in cold tea. That's everybody's bottom-line sensing mechanism—you can even taste it.<sup>182</sup>

Recent scientific studies show consuming plastic bottled water may actually be tied to obesity as plastics contain endocrine disrupting chemicals known as “obesogens” that alter metabolic rate and the number and size of fat cells.<sup>183</sup> Exposure is most dangerous during fetal development and early life, potentially leading to lifelong obesity.<sup>184</sup> Furthermore, obesogens attract other dangerous chemicals to store them in the fat cells of the body, perhaps providing a clue as to why obesity is linked to higher rates of other diseases such as cancer.<sup>185</sup>

Scientists discovered that chemicals in PET plastics, such as bisphenol A (BPA), and phthalates in other types of plastics, potentially interfere with estrogen and other reproductive hormones: “When comparing water of the same spring that is packed in glass or plastic bottles made of polyethylene terephthalate (PET), estrogenic activity is three times higher in water from plastic bottles. These data support the hypothesis that PET packaging materials are a source of

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<sup>181</sup> Paul Westerhoff et al. “Antimony Leaching From Polyethylene Terephthalate (PET) Plastic Used for Bottled Drinking Water.” *Water Research*, Feb. 2008, 42(3), 551–556 (2008). *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/17707454](http://www.ncbi.nlm.nih.gov/pubmed/17707454).

<sup>182</sup> Pawlowski, A. “Left Your Bottled Water in a Hot Car? Drink It With Caution, Some Experts Say.” *TODAY*, 16 Dec. 2019, [www.today.com/health/bottled-water-hot-plastic-may-leach-chemicals-some-experts-say-t132687](http://www.today.com/health/bottled-water-hot-plastic-may-leach-chemicals-some-experts-say-t132687).

<sup>183</sup> Darbre, Philippa D. “Endocrine Disruptors and Obesity.” *Current Obesity Reports*, 6(1), 15 Feb. 2017, pp. 18-27. *U.S. National Library of Medicine*, [www.ncbi.nlm.nih.gov/pmc/articles/PMC5359373/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5359373/).

<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

estrogen-like compounds.”<sup>186</sup> The lead researcher of the study acknowledged that he “started drinking tap water” since “[i]f you drink water from plastic bottles, you have a high probability of drinking estrogenic compounds.”<sup>187</sup>

Science has long established that hormone-mimicking chemicals wreak havoc on human development and cause cancer.<sup>188</sup> BPA is an industrial chemical used to make certain plastics and resins. Since the 1940s, BPA has been used primarily as a hardening agent in the manufacture of polycarbonate plastic and is ubiquitous in consumer products; it is found in the epoxy resin coating in the interior of modern metal food and aluminum soda cans, and in many other products, including the large polycarbonate water bottles that water service companies deliver to homes, schools, and offices. BPA lingers in the body, with 93 percent of Americans having detectable amounts in their urine.<sup>189</sup>

Originally synthesized in 1936 in the search for a synthetic estrogen replacement therapy, BPA has always been known to be estrogenic.<sup>190</sup> The link between excess estrogen and cancer is well established in medical research, which is why hormone replacement therapy for menopausal women is controversial: “We know a woman’s lifetime risk of breast cancer is directly linked to her lifetime exposure to estrogen—both natural and synthetic estrogen.”<sup>191</sup>

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<sup>186</sup> Wagner, Martin, and Jörg Oehlmann. “Endocrine Disruptors in Bottled Mineral Water: Estrogenic Activity in the E-Screen.” *The Journal of Steroid Biochemistry and Molecular Biology*, vol. 127, no. 1-2, 2011, pp. 128–135. *U.S. National Library of Medicine*, doi:10.1016/j.jsbmb.2010.10.007; Wagner, Martin et al. “Identification of Putative Steroid Receptor Antagonists in Bottled Water: Combining Bioassays and High-Resolution Mass Spectrometry.” *PLOS ONE*, Public Library of Science, journals.plos.org/plosone/article?id=10.1371/journal.pone.0072472.

<sup>187</sup> Sohn, Emily. “PET Bottles Potential Health Hazard.” *ABC Science*, 29 April 2009, [www.abc.net.au/science/articles/2009/04/29/2555698.htm](http://www.abc.net.au/science/articles/2009/04/29/2555698.htm).

<sup>188</sup> Soto, Ana M., and Carlos Sonnenschein. “Environmental Causes of Cancer: Endocrine Disruptors as Carcinogens.” *Nature Reviews Endocrinology*, 6(7), July 2010, pp. 363-370. *MedPub*, [www.ncbi.nlm.nih.gov/pmc/articles/PMC3933258/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3933258/).

<sup>189</sup> Biello, David. “Like a Guest That Won’t Leave, BPA Lingers in the Human Body.” *Scientific American*, 28 Jan. 2009, [www.scientificamerican.com/article/bpa-lingers-in-human-body/](http://www.scientificamerican.com/article/bpa-lingers-in-human-body/).

<sup>190</sup> Vogel, Sarah A. “The Politics of Plastics: the Making and Unmaking of Bisphenol A ‘Safety.’” *American Journal of Public Health*, American Public Health Association, 99(Suppl.3), Nov. 2009, S559-S566, [www.ncbi.nlm.nih.gov/pmc/articles/PMC2774166/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2774166/).

<sup>191</sup> Boyle, Lisa Kaas, “Plastic is Food Poisoning.” *HuffPost*, 8 June 2014, [www.huffpost.com/entry/plastic-is-food-poisoning\\_b\\_5219189](http://www.huffpost.com/entry/plastic-is-food-poisoning_b_5219189) (quoting Janet Nudelman, Director, Program and Policy for the Breast Cancer Fund).

Fetuses, infants, and children are especially vulnerable to the synthetic estrogen in BPA because their reproductive organs are still developing.<sup>192</sup> This means that pregnant women and children should reduce exposure to BPA. Reproductive-aged women should also be wary of BPA: “. . . it appears that the period right after fertilization and before a woman even knows she’s pregnant, is the most sensitive time in development . . . so if women are even thinking of becoming pregnant, they should consider limiting their exposure to BPA.”<sup>193</sup>

Estrogen-like chemicals like BPA alter chromosomes, increasing the risk of birth defects and miscarriages.<sup>194</sup> Cellular damage can hit three generations at once—BPA can affect a pregnant mother, her unborn fetus, and, if that fetus is female, that fetus’ future offspring.<sup>195</sup> There are now clear molecular mechanisms that explain how BPA alters human and animal cells at concentrations at and below one part per trillion.<sup>196</sup> And that is lower than the levels that many Americans have in their bodies, according to the Centers for Disease Control.<sup>197</sup>

The FDA banned BPA in baby bottles and children’s drinking cups. However, the sole focus of the ban on protecting the child fails to encompass the most damaging impacts that occur in utero through the mother’s exposure to BPA. A pregnant woman who drinks water from a polycarbonate bottle exposes both herself and her fetus to BPA. Furthermore, substitutes for BPA, like bisphenol S (BPS), used in plastic bottles and cups, cause genetic damage just like BPA.<sup>198</sup> Thus, the label “BPA Free” does not mean that a plastic container is free from danger.

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<sup>192</sup> “American Academy of Pediatrics Says Some Common Food Additives May Pose Health Risks to Children.” *AAP.org*, [www.aap.org/en-us/about-the-aap/aap-press-room/Pages/AAP-Says-Some-Common-Food-Additives-May-Pose-Health-Risks-to-Children.aspx](http://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/AAP-Says-Some-Common-Food-Additives-May-Pose-Health-Risks-to-Children.aspx).

<sup>193</sup> Taggart, Jennifer. *Smart Mama's Green Guide: Simple Steps to Reduce Your Child's Toxic Chemical Exposure*, Center Street Books, 2009 (quoting Professor Randy Jirtle, Department of Radiation Oncology, Duke University Medical Center).

<sup>194</sup> Hunt, Patricia A. et al. “BPA Alters Early Oogenesis and Follicle Formation in the Fetal Ovary of the Rhesus Monkey.” *Proceedings of the National Academy of Sciences*, 109(43), 23 Oct. 2012, pp. 17525-17530. *PubMed*, [doi.org/10.1073/pnas.1207854109](https://doi.org/10.1073/pnas.1207854109).

<sup>195</sup> Sohn, Emily. “PET Bottles Potential Health Hazard.” *Supra*, note 187

<sup>196</sup> Hong, Yeon-Pyo and Yun-Jung Yang. “Low-Dose Exposure to Bisphenol A in Early Life.” *IntechOpen*, 7 June 2017, [www.intechopen.com/books/bisphenol-a-exposure-and-health-risks/low-dose-exposure-to-bisphenol-a-in-early-life](http://www.intechopen.com/books/bisphenol-a-exposure-and-health-risks/low-dose-exposure-to-bisphenol-a-in-early-life).

<sup>197</sup> Raloff, Janet. “How Plastic We’ve Become.” *Science News*, 17. Jan 2018, [www.sciencenews.org/blog/food-thought/how-plastic-weve-become](http://www.sciencenews.org/blog/food-thought/how-plastic-weve-become).

<sup>198</sup> Service, Robert F. “BPA Substitutes May Be Just As Bad as the Popular Consumer Plastic.” *Science Magazine*, 13 Sept. 2018, [www.sciencemag.org/news/2018/09/bpa-substitutes-may-be-just-bad-popular-consumer-plastic](http://www.sciencemag.org/news/2018/09/bpa-substitutes-may-be-just-bad-popular-consumer-plastic).

### C. Emergency Use of Bottled Water

Despite the dangers associated with plastic bottled water, there are times when human health and justice require its use—particularly when tap water is either unavailable or contaminated.<sup>199</sup> Former Michigan Governor Rick Snyder defied this principle, however, when he challenged a court order that required Michigan to provide bottled water to Flint residents who lacked access to safe drinking water due to government misfeasance that resulted in lead poisoning and Legionnaire’s Disease. The Governor’s Office complained that providing bottled water was too costly and polluting: "The herculean effort required by the court order would be on the magnitude of a large-scale military operation."<sup>200</sup> Furthermore, Michigan argued that its recycling system could not handle the increased plastic waste.<sup>201</sup> In ruling against the Governor, the court acknowledged, "A safe water supply has always been critical to civilization."<sup>202</sup>

While, in light of the exigent circumstances, the court appropriately overruled the Governor’s Office’s otherwise valid argument about the inefficiencies of bottled water delivery, a crisis remains. Poor citizens, not the government, are forced to keep buying plastic bottled water at extreme costs, in addition to paying their water bills. Since the crisis, Flint residents have paid thousands of dollars to purchase bottled water for drinking, cooking, washing, and bathing: “Between 2005 and 2016, Nestlé [the largest purveyor of bottled water in the United States] has taken over 4 billion gallons of our water for pennies and sold it back to us for huge profits . . . Meanwhile, the people of Flint have been forced to use this bottled water for several

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<sup>199</sup> In emergency situations, boxed water (made from layers of virgin wood pulp, plastic and aluminum foil) is preferable to plastic bottled water as the amount of plastic in the packaging is reduced. A lifecycle analysis of boxed water, however, shows that it is not sustainable for use beyond emergencies. (Heimbuch, Jaymi. “Elizabeth Royte Says Boxed Water Just as Bad as Bottled.” *Treehugger*, 27 Mar. 2009, [www.treehugger.com/clean-water/elizabeth-royte-says-boxed-water-just-as-bad-as-bottled.html](http://www.treehugger.com/clean-water/elizabeth-royte-says-boxed-water-just-as-bad-as-bottled.html).)

<sup>200</sup> Dolan, Matthew. “Michigan Battles Order to Deliver Bottled Water to Flint Residents.” *Detroit Free Press*, 17 Nov. 2016, [www.freep.com/story/news/local/michigan/flint-water-crisis/2016/11/17/michigan-battles-order-deliver-bottled-water-flint-residents/94031608/](http://www.freep.com/story/news/local/michigan/flint-water-crisis/2016/11/17/michigan-battles-order-deliver-bottled-water-flint-residents/94031608/).

<sup>201</sup> *Id.*

<sup>202</sup> *Id.*

years and are required to pay some of the highest water bills in the country for undrinkable water.”<sup>203</sup>

New leadership in Michigan may help focus on long-term solutions. The morning after winning the race, Governor Gretchen Whitmer said that she wanted to make Michigan's drinking water her first legislative priority: “. . . The quality of our drinking water is something that is absolutely essential, you cannot live without clean drinking water<sup>204</sup> . . . [Michigan] is home to 21 percent of the world's fresh water and we've got a lot of communities that can't drink the water coming out of their tap. So, working on infrastructure in Michigan is at the top of the list.”<sup>205</sup>

Despite all its associated costs, including transportation and excess waste expenses, bottled water is still being used for extended periods beyond crisis intervention in the wake of natural disasters. For example, at a time when investment in building a modern water infrastructure in Puerto Rico is desperately needed for more sustainable water provision, bottled water remains a prolonged crutch. Puerto Rico relies on an outdated system of pipes, pumping stations, and treatment plants that has registered more drinking water violations than any other state or territory in the United States.<sup>206</sup> Close to 70 percent of the island's population gets its water from sources in violation of federal health standards for drinking water.<sup>207</sup>

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<sup>203</sup> Winter, Caroline. “Nestlé Makes Billions Bottling Water It Pays Nearly Nothing For.” *Bloomberg Businessweek*, 21 Sept. 2017, [www.bloomberg.com/news/features/2017-09-21/nestl-makes-billions-bottling-water-it-pays-nearly-nothing-for](http://www.bloomberg.com/news/features/2017-09-21/nestl-makes-billions-bottling-water-it-pays-nearly-nothing-for).

<sup>204</sup> Lawler, Emily. “Clean Drinking Water is Governor-elect Gretchen Whitmer's First Priority.” *Michigan Live*, 7 Nov. 2018, [www.mlive.com/news/2018/11/clean\\_drinking\\_water\\_is\\_govern.html](http://www.mlive.com/news/2018/11/clean_drinking_water_is_govern.html).

<sup>205</sup> *Id.*

<sup>206</sup> Schmidt, Samantha. “PUERTO RICO AFTER MARIA ‘Water Is Everything.’” *The Washington Post*, 12 Sept. 2018, [www.washingtonpost.com/news/national/wp/2018/09/12/feature/water-is-everything-but-for-many-in-puerto-rico-it-is-still-scarce/?utm\\_term=.794bbcbd8d91](http://www.washingtonpost.com/news/national/wp/2018/09/12/feature/water-is-everything-but-for-many-in-puerto-rico-it-is-still-scarce/?utm_term=.794bbcbd8d91).

<sup>207</sup> “Threats On Tap: Drinking Water Violations In Puerto Rico.” *Natural Resources Defense Council*, May 2017, [www.nrdc.org/sites/default/files/threats-on-tap-drinking-water-puerto-rico-ip.pdf](http://www.nrdc.org/sites/default/files/threats-on-tap-drinking-water-puerto-rico-ip.pdf).



#### **D. Leveling the Regulatory Playing Field Between Bottled and Tap Water**

Most consumers, swayed by clever advertising, believe that bottled water is safer and more pure than tap water. Yet, a 2009 Government Accountability Office (GAO) report<sup>208</sup> to Congress found that, despite a lack of public awareness about the quality of bottled water, FDA safety and consumer protections of bottled water are insufficient and often less stringent than comparable protections for tap water, which is regulated by the EPA pursuant to the Safe Water Drinking Act (SWDA). The SDWA requires water agencies to list the source, treatment, and every mineral and contaminant in municipal water; tap water supplies must also use certified laboratories for testing and notify customers of any contaminants or acute health risks that exceed federal levels within 24 hours.

Bottled water companies, on the other hand, test their own water, do not list contaminants, and are not bound by any notification requirements; in fact, the GAO found that information similar to that provided by public water systems was available for only a small percentage of 83 bottled water labels reviewed, companies contacted, or company Web sites analyzed.<sup>209</sup> And while the FDA concluded in 2000 that it was feasible for the bottled water industry to offer consumers the same information that public water systems are required to provide, neither the bottlers nor the agency have taken any steps to ensure that happens. The GAO, however, suggested that consumers would benefit from such additional information; officials from all 50 states and the District of Columbia reported that consumers often believe that bottled water is safer or healthier than tap water. Bottled water, which markets the illusion of superior purity, actually enjoys a competitive advantage over tap water by its ability to conceal information about contaminants.

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<sup>208</sup> United States Government Accountability Office. *Report to Congressional Requesters—Bottled Water: FDA Safety and Consumer Protections Are Often Less Stringent Than Comparable EPA Protections for Tap Water*. June 2009, [www.gao.gov/new.items/d09610.pdf](http://www.gao.gov/new.items/d09610.pdf).

<sup>209</sup> *Id.*

## **E. Misleading Advertising**

Spring water accounts for about 55 percent of the water bottled in the United States by brands that include Crystal Geyser and Arrowhead. The other 45 percent is sourced from the municipal water supply, meaning that companies, including Aquafina and Dasani, simply treat tap water—the same stuff that comes out of your faucet at home—and bottle it up to sell.<sup>210</sup>

A lawsuit against Poland Springs, a Nestlé brand, contends that its product is falsely labeled as spring water, and that the famous Poland Spring in Maine, which the company identifies as its source, effectively ran dry nearly 50 years ago. The lawsuit alleges that the company built and maintained six “phony, man-made ‘springs’” to comply with the law, and that one or more of the company’s wells are near a present or former human waste dump, landfill, or other similar site. Put another way, those famous Poland Spring images of water on a verdant hillside are misleading and deceptive, according to the lawsuit.<sup>211</sup> “Water is going to be one of the most important issues in the world,” said Steve Williams, a lawyer for the 12 plaintiffs from various northeastern states. “It’s vitally important to consumers to be told the truth.”<sup>212</sup>

## **V. MODELS OF WATER POLICY TO PROTECT PUBLIC WATER**

### **A. Models of Water Policy: Public Trust and Human Rights**

Drinking water policy should be framed and guided by the legal theories of public trust and human rights. The public trust doctrine is predicated on promoting the common welfare through fair and open decision-making; its application to water policy would ensure that decisions are made for the benefit of the public at large, rather than privileged groups.

Water policy driven by a human rights framework would consider societal needs, such as protection and allocation, as well as an individual’s personal right to water. It would foster

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<sup>210</sup> Greenpeace. “Bottling It: The Failure of Major Soft Drinks Companies to Address Ocean Plastic Pollution.” *Supra*, note 145

<sup>211</sup> Stevens, Matt. “Is Poland Spring Water Really From a Spring? ‘Not One Drop,’ Says a Lawsuit.” *The New York Times*, 29 Mar. 2019, [www.nytimes.com/2019/03/29/business/poland-spring-water.html](http://www.nytimes.com/2019/03/29/business/poland-spring-water.html).

<sup>212</sup> *Id.*

investment in public water systems that provide water where people need it most and access for those most in need.

## **B. The Public Trust Doctrine of Water Management**

The public trust doctrine provides that certain natural resources are held by the government in a special “trust” status for current and future generations. Government officials have an affirmative, ongoing duty to safeguard the long-term preservation of those resources for the benefit of the general public and may neither alienate those resources into private ownership nor permit their injury or destruction.<sup>213</sup>

Although the public trust doctrine was originally voiced in relation to navigable water bottoms, its extent has never been fully articulated, and its application to groundwater has varied with each region.<sup>214</sup> Distinguishing groundwater from navigable waters, however, is not only a hydrological fiction but also makes no real sense in terms of legal doctrine. Groundwater and surface waters are interconnected, and both are natural resources upon which humanity depends. Society should expect its government to protect and manage these water resources on an equal basis for the common use.

Groundwater—water located underground—comprises nearly 96 percent of the world’s non-saline fresh water. The remaining fresh water is found at the surface in streams, lakes, rivers and wetlands, known as surface water.<sup>215</sup> Since groundwater accounts for one half of the nation’s drinking water,<sup>216</sup> applying the public trust doctrine to its management is extremely important—and courts are beginning to recognize as much.

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<sup>213</sup> Frank, Richard M. “The Public Trust Doctrine: Assessing Its Recent Past and Charting its Future.” *University of California, Davis Law Review*, vol. 45:665, 1. Jan. 2012, 665-691, [lawreview.law.ucdavis.edu/issues/45/3/Topic/45-3\\_Frank.pdf](http://lawreview.law.ucdavis.edu/issues/45/3/Topic/45-3_Frank.pdf).

<sup>214</sup> Mark Davis and Chris Dalbom, “The Trust Abides.” *The National Wetlands Newsletter* published the Environmental Law Institute, Vol. 37, No. 4 (July/August 2015), [https://docs.wixstatic.com/ugd/32079b\\_6d71f7176fe2459eb82583590c77cecb.pdf](https://docs.wixstatic.com/ugd/32079b_6d71f7176fe2459eb82583590c77cecb.pdf); Tuholske, Jack. “Trusting the Public Trust: Application of the Public Trust Doctrine to Groundwater Resources.” *Vermont Journal of Environmental Law*, vol. 9, no. 2, 2008, p.189., doi:10.2307/vermjenvilaw.9.2.189.

<sup>215</sup> Oskin, Becky. “What Is Groundwater?” *LiveScience*, 8 Jan. 2015, [www.livescience.com/39579-groundwater.html](http://www.livescience.com/39579-groundwater.html).

<sup>216</sup> Glennon, Robert. *Water Follies: Groundwater Pumping And The Fate Of America’s Fresh Waters*. Washington: Island Press, 2002.

In 2018, a California court ruled that the county government must consider the public trust doctrine—in addition to complying with existing laws and regulations governing groundwater extractions impacting uses of the river—when permitting wells that could adversely affect flows in a local river.<sup>217</sup> And in 2000, the Hawaii Supreme Court issued a trailblazing decision, confirming that the public trust doctrine applies to protection of all water resources—with no distinction between groundwater and surface water.<sup>218</sup> The court determined that Hawaii’s public trust doctrine is rooted in both the state’s constitution and its common law, and, consequently, the state must protect and regulate both ground and surface waters.<sup>219</sup>

In addition to reinforcing public trust doctrine provisions, Hawaii’s Supreme Court affirmed the precautionary principle, a significant protective measure that is more commonly applied in European environmental law:

Where scientific evidence is preliminary and not yet conclusive regarding the management of fresh water resources which are part of the public trust, it is prudent to adopt ‘precautionary principles’ in protecting the resource. That is, where there are present or potential threats or serious damage, lack of full scientific certainty should not be a basis for postponing measures to prevent degradation. Awaiting for certainty will often allow for only reactive, not preventive, regulatory action.<sup>220</sup>

Other states<sup>221</sup> and countries<sup>222</sup> have incorporated the public trust doctrine into legislation and even constitutions with specific reference to groundwater. Recent legislation in California called

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<sup>217</sup> Gray, Brian. “The Public Trust and SGMA.” *California Water Blog, UC Davis Center for Watershed Sciences*, 7 Oct. 2018, [californiawaterblog.com/2018/10/07/the-public-trust-and-sgma/](http://californiawaterblog.com/2018/10/07/the-public-trust-and-sgma/); *Environmental Law Foundation et al. v. California State Water Resources Control Board*, No. C083239 (Cal. Ct. App. Aug. 29, 2018).

<sup>218</sup> *IN RE: the WATER USE PERMIT APPLICATIONS, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiāhole Ditch Combined Contested Case Hearing*, No. 21309 (Supreme Court of Hawaii Aug. 22, 2000).

<sup>219</sup> *Id.*

<sup>220</sup> *Id.*

<sup>221</sup> Sykes, Robert. “Applying Vermont’s Public Trust Groundwater Statute.” *University of Denver Water Law Review*, 17 Sept. 2012, [duwaterlawreview.com/applying-vermonts-public-trust-groundwater-statute/](http://duwaterlawreview.com/applying-vermonts-public-trust-groundwater-statute/).

<sup>222</sup> Nanni, Marcella et al.. “Groundwater Legislation & Regulatory Provision from Customary Rules to Integrated Catchment Planning.” *The World Bank Global Water Partnership Associate Program, Sustainable Groundwater Management Concepts and Tools*, Briefing Note 4, [documents.worldbank.org/curated/en/343581468314999079/pdf/300920PAPER0BN4.pdf](http://documents.worldbank.org/curated/en/343581468314999079/pdf/300920PAPER0BN4.pdf).

The Sustainable Groundwater Management Act<sup>223</sup> not only requires sustainable management planning for groundwater, but also helps dissolve the legal distinction between groundwater and navigable surface waters.

### C. **Water as a Right Versus a Commodity: A Cautionary Tale, Nestlé’s Victory in Michigan**

While the aforementioned California and Hawaii court decisions should serve as models to other jurisdictions, a recent decision by Michigan’s Department of Environmental Quality (DEQ) offers a cautionary tale concerning the sustainability of freshwater resources when the public trust is ignored. Nestlé, a Swiss company, is the largest water bottler in the world,<sup>224</sup> branded under various names like Arrowhead, Pure Life, Poland Springs, and Pellegrino. It may come as little surprise that its corporate leadership characterizes as “extreme” the notion that water is a human right:

Water is, of course, the most important raw material we have today in the world. It’s a question of whether we should privatize the normal water supply for the population. And there are two different opinions on the matter. **The one opinion, which I think is extreme, is represented by the NGOs, who bang on about declaring water a public right. That means that as a human being you should have a right to water. That’s an extreme solution. The other view says that water is a foodstuff like any other, and like any other foodstuff it should have a market value.** Personally, I believe it’s better to give a foodstuff a value so that we’re all aware it has its price, and then that one should take specific measures for the part of the population that has no access to this water, and there are many different possibilities there.<sup>225</sup>

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<sup>223</sup> “SGMA Groundwater Management.” *California Department of Water Resources*, [water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management](http://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management). (Last accessed 16 July 2019.)

<sup>224</sup> “Get to Know Us.” *Nestlé Waters*, [www.nestle-waters.com/get-to-know-us](http://www.nestle-waters.com/get-to-know-us). (Last accessed 16 July 2019.)

<sup>225</sup> *We Feed The World*. Directed by Erwin Wagenhofer, performance by Jean Ziegler, Pater Brabeck, and Karl Otrók. Allegrofilm, 2005. DVD. (emphasis added)

The decades-long battle with Nestlé over its Michigan operations began in 2001, when environmentalists sued Nestlé over potential damage to Michigan’s lakes, rivers, and streams caused by the company’s groundwater withdrawals. After years of legal battles at the trial and appellate court levels, Nestlé agreed in 2009 to a settlement that required the company to significantly reduce the rate of its groundwater siphoning and to curtail its spring and summer withdrawals.<sup>226</sup>

In 2016, environmentalists regrouped to protest Nestlé’s proposal to significantly boost its pumping at a Michigan well.<sup>227</sup> They filed 80,945 formal public comments with the DEQ—of all the comments ultimately submitted, only 75 viewed the proposed pumping increase favorably—and presented a petition signed by 345,000 citizens.<sup>228</sup> However, while the DEQ admitted that “the majority of the public comments were in opposition of the permit” it found that “most of them related to issues of public policy which are not, and should not be, part of an administrative permit decision.”<sup>229</sup>

Despite unprecedented public opposition to Nestlé’s plan, the DEQ approved Nestlé’s request, finding that the company’s \$36 million expansion of its groundwater extraction plans met existing legal standards under the Michigan Safe Drinking Water Act.<sup>230</sup> The decision

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<sup>226</sup> Gray, Kathleen. “Michigan OKs Nestlé Permit for Increased Water Withdrawal for Bottled Water Plant.” *Detroit Free Press*, 2 Apr. 2018, [www.freep.com/story/news/2018/04/02/michigan-oks-nestle-permit-increased-water-withdrawal-bottled-water-plant/479896002/](http://www.freep.com/story/news/2018/04/02/michigan-oks-nestle-permit-increased-water-withdrawal-bottled-water-plant/479896002/).

<sup>227</sup> Nestlé Waters North America’s Submittal of a Permit Application Information Package, under Section 17 of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended. Michigan Department of Environmental Quality, 2 Apr. 2018.

<sup>228</sup> Chappel, Bill. “Michigan OKs Nestlé Water Extraction, Despite 80K Public Comments Against It.” *National Public Radio: The Two-Way*, 3 Apr. 2018, [www.npr.org/sections/thetwo-way/2018/04/03/599207550/michigan-oks-nestl-water-extraction-despite-over-80k-public-comments-against-it](http://www.npr.org/sections/thetwo-way/2018/04/03/599207550/michigan-oks-nestl-water-extraction-despite-over-80k-public-comments-against-it).

<sup>229</sup> *Id.*

<sup>230</sup> The DEQ reviewed Nestle’s application under Section 17 of the Michigan Safe Drinking Water Act (SDWA), a regulation specific to Michigan water bottlers developed in response to environmental concerns sparked by Nestle’s Sanctuary Springs well field. It was the first Section 17 application to be reviewed since the law passed. The DEQ said the permit met the requirements of the Michigan Safe Drinking Water Act. “The scope and detail of the department’s review of the Nestlé permit application represents the most extensive analysis of any water withdrawal in Michigan history,” said DEQ Administrator Heidi Grether. Grether is not known to be an environmentalist. Before joining DEQ, Grether worked in external affairs for BP America from 1993 to 2012, where she was a lobbyist and manager heavily involved in the company’s response to the 2010 Deepwater Horizon accident in the Gulf of Mexico. (Egan, Paul, and Matthew Dolan. “Snyder’s New MDEQ Director Was Manager for BP during 2010 Oil Spill.” *Detroit Free Press*, 15 July 2016, [www.freep.com/story/news/local/michigan/flint-water-crisis/2016/07/14/snyder-names-heidi-grether-new-director-michigan-deq/87074842/](http://www.freep.com/story/news/local/michigan/flint-water-crisis/2016/07/14/snyder-names-heidi-grether-new-director-michigan-deq/87074842/).)

infuriated opponents who point out that Nestlé pays nothing more than an annual \$200 permit fee in exchange for such significant access to the state’s groundwater.<sup>231</sup> State Senator Rebekah Warren (D-Ann Arbor), who serves on the Michigan Senate's Natural Resources Committee, stated "Michiganders know that no private company should be able to generate profits by undermining our state's precious natural resources . . . Sadly, the DEQ chose to give the green light to a foreign company to continue pumping Michigan water virtually unchecked, hanging a ‘For Sale’ sign on Michigan’s abundant water resources."<sup>232</sup>

Had the public trust doctrine been adopted into Michigan statutory law in 2006—the House of Representatives passed a bill to that end, but it was ultimately defeated by just one vote in the Senate<sup>233</sup>—some experts believe that it could have served as legal justification to block Nestlé’s permit request on the basis that the DEQ failed to manage Michigan’s water resources in the public’s best interests.<sup>234</sup> Statutory public trust legislation presents a high bar for natural resource protection by including in environmental impact evaluation the notion of a future common good that may prevail over private corporate interest (including profits): “by statutorily placing groundwater in the public trust, lawmakers could have given the state a separate legislative standard by which to say yes or no to a water withdrawal permit.”<sup>235</sup> Moreover, the presence of the public trust doctrine “may not have prevented issuance of the [Nestlé] permit, but it would impose an overarching limitation on the exercise of government power to transfer or allow diversion and sale of the public trust waters of the state . . .—because a state cannot exceed public trust or ignore it.”<sup>236</sup>

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<sup>231</sup> Gray, Kathleen. “Michigan OKs Nestlé Permit for Increased Water Withdrawal for Bottled Water Plant.” *Supra*, note 226

<sup>232</sup> *Id.*

<sup>233</sup> Wilson, Gary. “Can the Public Trust Doctrine Protect Michigan’s Groundwater?” *GreatLakesNow*, 7 May 2018, [www.greatlakesnow.org/2018/05/can-the-public-trust-doctrine-protect-michigans-groundwater/](http://www.greatlakesnow.org/2018/05/can-the-public-trust-doctrine-protect-michigans-groundwater/).

<sup>234</sup> Though Section 17 of the SDWA does not mention the human right to water or the public trust, it does state the following: “This section shall not be construed as affecting, intending to affect, or in any way altering or interfering with common law water rights or the applicability of other laws providing for the protection of natural resources or the environment.” (Safe Drinking Water Act (excerpt), *Michigan.Gov*, [www.michigan.gov/documents/deq/deq-dwmad-eh-swpu-Permit\\_619295\\_7.pdf](http://www.michigan.gov/documents/deq/deq-dwmad-eh-swpu-Permit_619295_7.pdf). (Last accessed 16 July 2019.))

<sup>235</sup> Wilson, Gary. “Can the Public Trust Doctrine Protect Michigan’s Groundwater?” *Great Lakes Now*, 7 May 2018, [www.greatlakesnow.org/2018/05/can-the-public-trust-doctrine-protect-michigans-groundwater/](http://www.greatlakesnow.org/2018/05/can-the-public-trust-doctrine-protect-michigans-groundwater/).

<sup>236</sup> *Id.*

The former director of the Michigan Department of Energy, Labor and Economic Growth recently made a powerful case for application of the public trust doctrine:

Our legal and moral authority to resist appropriation of our water wealth will be a function of how adept and effective we are as Great Lakes stewards in the conservation and protection of our water.

In this, governance in Michigan is failing. The Flint water crisis is a stark lesson of the pitfalls of overriding and ignoring government standards intended to safeguard public health and safety. The PFAS crisis is attributable to the inadequacies of existing environmental laws, exacerbated by failed government leadership that ignored the findings and recommendations of the scientific professionals. Both the Flint crisis and PFAS concerns are incidents of a much larger systemic problem—groundwater contamination that is pervasive, yet is being ignored by policymakers and political leaders.

The water-related exigencies Michigan is experiencing call for broader application of the Public Trust Doctrine to reestablish and reaffirm government’s responsibility to protect and safeguard water resources for the benefit of the public. Recognizing the interdependence of natural systems and the importance and value of the ecological services water resources provide, the Public Trust Doctrine must be applied aggressively and proactively to address conditions that have the potential to harm or impair commonly held water resources.<sup>237</sup>

#### **D. Human Right to Water**

In 2010, the UN General Assembly and the Human Rights Council recognized the human right to water as part of binding international law.<sup>238</sup> Specifically, the human right to water

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<sup>237</sup> Pruss, Skip. “Resetting Expectations: the Value of Natural Systems and Government's Role in Protecting Water.” *FLOW*, 7 Aug. 2019, [flowforwater.org/resetting-expectations-the-value-of-natural-systems-and-governments-role-in-protecting-water/](http://flowforwater.org/resetting-expectations-the-value-of-natural-systems-and-governments-role-in-protecting-water/).

<sup>238</sup> “Human Right to Water.” *United Nations*, [www.un.org/waterforlifedecade/human\\_right\\_to\\_water.shtml](http://www.un.org/waterforlifedecade/human_right_to_water.shtml). (Last accessed 16 July, 2019.)



entitles everyone access to water that is (a) sufficient, (b) safe, (c) acceptable, (d) physically accessible, and (e) affordable.<sup>239</sup> In support of its proclamation that a human right to water exists, the United Nations emphasizes government accountability and personal water use:<sup>240</sup>

- Accountability of the government to develop laws and mechanisms of redress to promote and protect access to safe drinking water.
- Prioritization in allocating limited public resources to personal and domestic uses of water and to those who do not have access or who face discrimination in accessing safe drinking water—even in times of crisis.
- Participation of individuals and communities in the design and management of water infrastructure to ensure services are relevant and sustainable.

Several nations already prioritize essential personal and domestic uses—drinking, personal sanitation, washing clothes, food preparation, and personal and household hygiene—over other water uses, including in times of water stress and water scarcity.<sup>241</sup>

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<sup>239</sup> The United Nations “The Right to Water: Fact Sheet Number 35”

([www.ohchr.org/Documents/Publications/FactSheet35en.pdf](http://www.ohchr.org/Documents/Publications/FactSheet35en.pdf)) offers the following definitions:

- “Sufficient”: The water supply for each person must be sufficient and continuous for personal and domestic uses. These uses ordinarily include drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene.

“Safe”: The water required for each personal or domestic use must be safe, therefore free from micro-organisms, chemical substances and radiological hazards that constitute a threat to a person’s health. Measures of drinking-water safety are usually defined by national and/or local standards for drinking-water quality.

- “Acceptable”: Water should be of an acceptable color, odor and taste for each personal or domestic use. All water facilities and services must be culturally appropriate and sensitive to gender, lifecycle and privacy requirements.
- “Physically accessible”: Everyone has the right to a water and sanitation service that is physically accessible within, or in the immediate vicinity of the household, educational institution, workplace or health institution.
- “Affordable”: Water, and water facilities and services, must be affordable for all.

<sup>240</sup> *Id.*

<sup>241</sup> National laws prioritizing water for essential personal and domestic uses over other uses include:

- France. Priority of drinking water over other water uses (Environmental Code L 211.1)
- Morocco. Priority should be given to personal and domestic uses of water in the event of water scarcity. (Article 85 of Law 10-95)
- Niger. During droughts, local authorities may prohibit the use of water that is not directly related to human consumption, including water for gardening, swimming pools or washing cars. (Article 9 of Law No. 98-041)
- South Africa. “. . . if the water services provided by a water services institution are unable to meet the requirements of all existing consumers, it must give preference to the provision of basic water supply and basic sanitation to them.” (Section 5 of the Water Services Act)

Formal recognition of such a fundamental right here in the United States can translate into national policies that will protect our drinking water supply in a time of peril, decrease plastic pollution, and improve public health and welfare. The United States should formally amend the Safe Drinking Water Act to include the human right to water—and it need look no further than California for a legislative template.

In 2012, California became the first state in the nation to legally recognize the human right to water by legislating that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.”<sup>242</sup> The human right to water extends to all Californians, including disadvantaged individuals and groups and communities in rural and urban areas.

On February 16, 2016, as part of this legislation’s implementation, California’s agency in charge of water resource management adopted a resolution identifying the human right to water as a top priority and core value, mandating the state’s agencies work “to preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.”<sup>243</sup>

This resolution echoes the major tenets of the United Nations’ recognition of the human right to water. First, the resolution formalized California’s commitment to consider how its agencies’ activities impact and advance the human right to safe, clean, affordable, and accessible water to support basic human needs. These activities may include revising or establishing water quality control plans, policies, and grant criteria; permitting; site remediation and monitoring; and water right administration.<sup>244</sup>

In addition, under the resolution, agencies are required to work with relevant individual and community stakeholders to develop new systems (or enhance existing systems) to collect and publish data—including performance measures to evaluate California’s progress toward making the human right to water a reality—and identify and track communities that do not have,

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<sup>242</sup> Assem. Bill No. 685, 2011-2012 (Cal. 2012), [www.leginfo.ca.gov/pub/11-12/bill/asm/ab\\_0651-0700/ab\\_685\\_bill\\_20120925\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_0651-0700/ab_685_bill_20120925_chaptered.pdf).

<sup>243</sup> “Human Right to Water.” *California Water Boards, State Water Resources Control Board*, [www.waterboards.ca.gov/water\\_issues/programs/hr2w/](http://www.waterboards.ca.gov/water_issues/programs/hr2w/). (Last accessed 16 July 2019.)

<sup>244</sup> *Id.*

or are at risk of not having, safe, clean, affordable, and accessible water for drinking, cooking, and sanitary purposes.<sup>245</sup>

While much legislative attention has focused on delivering water to rural communities where small water utilities face infrastructure challenges, a broader focus on “Disadvantaged Communities” as defined by California’s EPA,<sup>246</sup> including the urban poor, should be targeted for equitable support in gaining their right and access to safe drinking water in the public realm through hydration stations. Cities now contain our largest populations, and attention to urban water issues will help the greatest number of Americans.

## **VI. SOLUTIONS**

### **A. Policies to Promote Fountains**

The time to ensure the preservation of America’s drinking water resources and to invest in safe drinking water infrastructure is now. Public drinking fountains hydrate the public in the most sustainable, healthy, safe, nonpolluting, and cost-effective manner. This responsibility belongs to civic institutions from federal and state leadership to water agencies, cities, school districts, and health departments, collaborating in new ways for a robust and sustainable public fountains system.

### **B. Fountains and Tap Water Education**

Children have a special developmental need for water and, as part of their health curriculum, should be educated about the benefits of tap water. A 2015 Harvard study established that more than half of all children and adolescents in the U.S. are not getting sufficient hydration—a situation that could have significant repercussions on their physical

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<sup>245</sup> *Id.*

<sup>246</sup> Disadvantaged communities are designated by CalEPA by using the California Communities Environmental Health Screening Tool assessment tool that helps identify the communities most burdened by or associated with air and water pollution, high unemployment, health conditions such as heart disease and asthma, and hazardous waste. (“Disadvantaged Communities Definition.” *California Energy Commission*, [www.energy.ca.gov/commission/diversity/definition.html](http://www.energy.ca.gov/commission/diversity/definition.html); see also “Disadvantaged Communities.” *California Public Utilities Commission*, [www.cpuc.ca.gov/discom/](http://www.cpuc.ca.gov/discom/).)

health and cognitive and emotional functioning. The study also found racial/ethnic and gender gaps in hydration status. Black children and adolescents were at higher risk of inadequate hydration than whites; boys were at higher risk than girls.<sup>247</sup> A 2011 study published in the *American Journal of Public Health* found:

Children and adolescents are not consuming enough water, instead opting for sugar-sweetened beverages (sodas, sports and energy drinks, milks, coffees, and fruit-flavored drinks with added sugars), 100 percent fruit juice, and other beverages. Drinking sufficient amounts of water can lead to improved weight status, reduced dental caries, and improved cognition among children and adolescents. Because children spend most of their day at school and in child care, ensuring that safe, potable drinking water is available in these settings is a fundamental public health measure.<sup>248</sup>

An earlier study showed that among adolescents, plain drinking water accounted for only 33 percent of total water intake, with the remaining amount consisting of beverages containing excess calories.<sup>249</sup> The researchers in the *American Journal of Public Health* report concluded that increasing drinking water access in schools is a step in the right direction toward encouraging students' water intake. To effectively shift student preferences from sugary beverages to water, schools and child care facilities should restrict competitive beverage sales and advertising and develop educational interventions to encourage tap water consumption.<sup>250</sup> Unfortunately, schools have contracted with beverage companies to supply bottled drinks to their students while failing to provide sufficient free safe drinking water access through fountains.

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<sup>247</sup> Kenney, EL et al. "Prevalence of Inadequate Hydration Among US Children and Disparities by Gender and Race/Ethnicity: National Health and Nutrition Examination Survey, 2009-2012." *American Journal of Public Health*, 105(8), Aug. 2015, e113-8. *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/26066941](http://www.ncbi.nlm.nih.gov/pubmed/26066941).

<sup>248</sup> Patel, Anisha I., MD, and Karla E. Hampton, JD. "Encouraging Consumption of Water in School and Child Care Settings: Access, Challenges, and Strategies for Improvement." *American Journal of Public Health*, 101(8), Aug. 2011, pp. 1370-1379. *PubMed*, [www.ncbi.nlm.nih.gov/pmc/articles/PMC3134515/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3134515/).

<sup>249</sup> Kant, AK, Graubard, BI. "Contributors of Water Intake in US children and Adolescents: Associations With Dietary and Meal Characteristics—National Health and Nutrition Examination Survey 2005–2006. *American Journal of Clinical Nutrition*, 92(4), Oct. 2010, pp. 887–896, *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/20685949](http://www.ncbi.nlm.nih.gov/pubmed/20685949).

<sup>250</sup> Patel, Anisha I., MD, and Karla E. Hampton, JD. *Supra*, note 248

In 2006, the Center for Science in the Public Interest conducted the first national study<sup>251</sup> of school beverage contracts, analyzing 120 school beverage contracts in 16 states. The study discovered the following:

1. The majority of revenues generated from beverage sales on school campuses goes to beverage companies, not schools.
2. School beverage contracts contain both logo marketing and sales quota provisions suggesting that beverage companies view the marketing of their products in schools as being as valuable as the revenue generated through school beverage sales.
3. Cash advances provide incentives to schools to sign with certain beverage companies for long time periods, locking them into contracts with little payback over time. The funds generated by selling bottled drinks on campus are not as lucrative as other fundraising options such as selling wrapping paper.

While no repeat studies have been made over the past 13 years, bottled water has since become omnipresent on school campuses. Today, many schools are selling out the health, safety, and economic welfare of their students for contracts that benefit corporations ahead of students.

The U.S. Healthy, Hunger-Free Kids Act of 2010 authorizes funding and sets policy for the United States Department of Agriculture’s (USDA) child nutrition programs, including the National School Lunch Program, the School Breakfast Program, and the Child and Adult Care Food Program.<sup>252</sup> The Act requires schools participating in federally-funded meal programs to make water available during meal periods at no cost to students. The Act also mandates that childcare facilities provide free drinking water throughout the day. But policies and funding need to ensure this water comes from the tap—not costly and polluting plastic bottles.

Just as state departments of education that administer federal meal programs may impose nutrition standards that exceed federal requirements, so too can they go above and beyond

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<sup>251</sup> Center for Science in the Public Interest and the Public Health Advocacy Institute. “Raw Deal: School Beverage Contracts Less Lucrative Than They Seem.” *Center for Science in the Public Interest*, 1 Jan. 2006, [cspinet.org/resource/raw-deal-school-beverage-contracts-less-lucrative-they-seem](http://cspinet.org/resource/raw-deal-school-beverage-contracts-less-lucrative-they-seem).

<sup>252</sup> The Child and Adult Care Food Program offers federal assistance from the U.S. Department of Agriculture to states to provide meals and snacks to children and older or impaired adults. In fiscal year 2018, over 4.3 million children and 131,634 adults received food on a typical day. (“Child and Adult Care Food Program.” United States Department of Agriculture, Economic Research Service, [www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/child-and-adult-care-food-program/](http://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/child-and-adult-care-food-program/). (Last accessed 16 July 2019.))

federal building codes that govern drinking water infrastructure in schools. The international building code currently requires one drinking fountain per 100 people on school campuses<sup>253</sup>; this regulation should be enforced and expanded to cover parks and transportation hubs. Moreover, the code should be updated to require bottle filling stations, rather than traditional drinking fountains as the latter are more difficult to use when refilling bottles.<sup>254</sup> The State of Washington has modernized its code in this manner,<sup>255</sup> and there is no reason why other jurisdictions cannot follow suit.

A study conducted in New York City public schools found that the introduction of water dispensers with disposable cups in school cafeterias increased water consumption by threefold.<sup>256</sup> The authors noted similar results in other studies<sup>257</sup> conducted in middle schools in California that added a five-week educational component about the health benefits of drinking water. A German study found that water fountains, accompanied by a lesson plan and organized water bottle fill-ups for second and third graders, led to higher water consumption and a lower risk of being overweight.<sup>258</sup> Finally, a British study<sup>259</sup> looked at whether an educational program promoting water consumption, coupled with improved access, led to more actual consumption than improved access did on its own. The researchers concluded that it did. What remains unclear from these studies is whether the children's increased water consumption continues

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<sup>253</sup> “2018 International Building Code, Chapter 29 Plumbing Systems.” *International Code Council*, [codes.iccsafe.org/content/IBC2018/chapter-29-plumbing-systems](https://codes.iccsafe.org/content/IBC2018/chapter-29-plumbing-systems). (Last accessed 16 July 2019.)

<sup>254</sup> “How State Plumbing Codes Can Increase Access to Drinking Water in Schools.” *ChangeLab Solutions*, [www.changelabsolutions.org/publications/schools-plumbing-codes](http://www.changelabsolutions.org/publications/schools-plumbing-codes). (Last accessed 16 July 2019.)

<sup>255</sup> “Bottle filling stations. Bottle filling stations shall be provided in accordance with Sections 2902.5.4.1 through 2902.5.4.3.” (Washington Administrative Code, §51-50-2902.5.4, [apps.leg.wa.gov/wac/default.aspx?cite=51-50-2900](http://apps.leg.wa.gov/wac/default.aspx?cite=51-50-2900)).

<sup>256</sup> Elbel, Brian et al. “A Water Availability Intervention in New York City Public Schools: Influence on Youths’ Water and Milk Behaviors.” *American Journal of Public Health*. 105(2), Feb. 2015, pp. 365-372. *PubMed*, [www.ncbi.nlm.nih.gov/pmc/articles/PMC4318331/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318331/).

<sup>257</sup> Patel AI et al. “Increasing the Availability and Consumption of Drinking Water in Middle Schools: a Pilot Study.” *Preventing Chronic Disease*, 8(3):A60., May 2011. *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/21477500](http://www.ncbi.nlm.nih.gov/pubmed/21477500). See also Patel et al. “A Trial of the Efficacy Costs of Water Delivery Systems in San Francisco Bay Area Middle Schools, 2013.” *Preventing Chronic Disease*, 13:E88, 7 July 2016. *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/27390074](http://www.ncbi.nlm.nih.gov/pubmed/27390074).

<sup>258</sup> Muckelbauer, Rebecca et al. *Supra*, note 76

<sup>259</sup> Loughridge JL, and J Barratt. “Does the Provision of Cold Filtered Water in Secondary School Cafeterias Increase Water Drinking and Decrease the Purchase of Soft Drinks?” *Journal of Human Nutrition and Dietetics*, 18(4), Aug. 2005, pp. 281-286. *PubMed*, [www.ncbi.nlm.nih.gov/pubmed/16011564](http://www.ncbi.nlm.nih.gov/pubmed/16011564).

outside the school setting, a subject worthy of further review. Additionally, assigning reusable water bottles to students could further increase their water intake after school, during sports programs, and at home while reducing plastic waste.

Few schools, if any, provide meaningful drinking water education. School wellness programs, as well as the health and science curriculum, offer ideal opportunities to educate our youth about the health benefits of consuming tap water, the water cycle, drinking water sources, water treatment, and the delivery systems that make tap water possible.

First Lady Michelle Obama was on the right track when she focused on drinking water as part of her Let's Move! and related Drink Up! campaigns to improve health and reduce childhood obesity. She said:

Since we started the Let's Move! initiative, I've been looking for as many ways as possible to help families and kids lead healthier lives. I've come to realize that if we were going to take just one step to make ourselves and our families healthier, probably the single best thing we could do is to simply drink more water. That's it—it's really that simple. Drink just one more glass of water a day and you can make a real difference for your health, your energy, and the way you feel. So Drink Up and see for yourself.<sup>260</sup>

Unfortunately, the Drink Up campaign collaborated primarily with companies that bottle water, including the American Beverage Association (the trade organization for soda companies) and the International Bottled Water Association, while failing to address tap water as the healthiest and most equitable, affordable, and environmentally sustainable choice. Drink Up highlights bottled water as part of its promotional campaign, even branding the Drink Up logo on nearly 300 million packs of bottled water and more than half a billion bottles of water. Drink Up's message included no particular encouragement to replace soda or other sweetened drinks with water, nor did the campaign seek to ban sugary beverages in schools or limit how they are marketed to children.

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<sup>260</sup> "First Lady Michelle Obama to Ask Everyone to 'Drink Up' with More Water." The White House, President Barack Obama, Archives, 12 Sept. 2013, [obamawhitehouse.archives.gov/the-press-office/2013/09/12/first-lady-michelle-obama-ask-everyone-drink-more-water](http://obamawhitehouse.archives.gov/the-press-office/2013/09/12/first-lady-michelle-obama-ask-everyone-drink-more-water).

### C. Resources to Promote and Manage Provision of Tap Water

There are several excellent publications designed to assist schools in making tap water the drink of choice for their students during the school day and to promote tap water as the healthiest option throughout life.<sup>261</sup> These resources can also be adapted for use in other contexts, including government agencies and private companies.

The key recommendations of the Harvard School of Public Health Prevention Research Center's 2014 report, "*Keep it Flowing: A Practical Guide to School Drinking Water Planning, Maintenance and Repair*"<sup>262</sup> are summarized as follows:

- Require school building standards to include drinking water delivery options in food service areas
- Institute and oversee a uniform, routine water quality testing protocol in all school buildings
- Address drinking water in school wellness policies
- Use sustainability programs and projects to promote water and to support drinking fountain maintenance efforts
- Establish water fountain cleaning best practices
- Integrate drinking fountain maintenance into existing pest management systems
- Serve safe and appealing water with traditional drinking fountains, bottle-fillers, other tap water dispensers, and pitchers and cups
- Manage trash and recyclable materials associated with drinking water

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<sup>261</sup> The CDC produced a helpful Healthy Schools Water Access educational tool kit that explains the benefits of drinking water, the legal requirements in the school setting under the Healthy, Hunger Free Kids Act of 2010, The National School Lunch Program and School Breakfast Program, and tools to increase access in the schools including funding sources. (Centers for Disease Control and Prevention. Increasing Access to Drinking Water in Schools. Atlanta, GA: US Department of Health and Human Services (2014) [www.cdc.gov/healthyschools/npao/pdf/water\\_access\\_in\\_schools\\_508.pdf](http://www.cdc.gov/healthyschools/npao/pdf/water_access_in_schools_508.pdf)); another guide contains helpful descriptions of tap water delivery systems (Grummon, A., Hampton, K.E., Oliva, A., Brindis, C.D., Patel A.I. *Water Works: A Guide to Improving Water Access and Consumption in Schools to Improve Health and Support Learning* (2014) [www.waterinschools.org/pdfs/WaterWorksGuide2014.pdf](http://www.waterinschools.org/pdfs/WaterWorksGuide2014.pdf)).

<sup>262</sup> Harvard School of Public Health Prevention Research Center on Nutrition and Physical Activity. *Keep it Flowing: A Practical Guide to School Drinking Water Planning, Maintenance & Repair*. Boston, MA, September (2014) [cdn1.sph.harvard.edu/wp-content/uploads/sites/84/2014/09/Keep-It-Flowing.pdf](http://cdn1.sph.harvard.edu/wp-content/uploads/sites/84/2014/09/Keep-It-Flowing.pdf).



It is worth noting that while reusable water bottles are not mentioned in “Keep it Flowing,” they are far more sustainable than cups and can eliminate waste entirely. Where cups are used, they should be paper rather than plastic.

Tap water education can and should be included across a diverse set of disciplines—including health, physical education, history, science, physics, math, and economics. Students and the larger community can benefit from understanding our natural water cycle, the science and engineering behind the delivery of drinking water to homes and public environments, and the many health advantages of tap water.

#### **D. Keeping Tap Water Safe in Schools and Other Public Places**

The American Heart Association recommends building trust around water fountains in order to increase water consumption in schools: “Regular testing of the water for quality and safety is needed, and should be a transparent process, whereby parents and students are informed of the results, and made aware of any plans to improve the quality and safety of the schools’ water.”<sup>263</sup>

Though lead rarely occurs naturally in drinking water sources, it may become present when water passes through older plumbing fixtures or solder containing lead that connects plumbing. Lead in public water has become an intense focus of public concern since the 2014 Flint crisis, although that lead contamination arose from water source changes specific to the Flint region and not common lead plumbing issues.<sup>264</sup>

In 2015, the Los Angeles Unified School District (LAUSD)—the second largest (in terms of number of students) public school system in the United States—allocated nearly \$20 million to a lead-safe fountains program.<sup>265</sup> The fountain project will allow the district to end its

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<sup>263</sup> The American Heart Association. *Increasing Access to Safe Drinking Water in Schools and Communities, Policy Statement*. June 2015. [www.heart.org/-/media/files/about-us/policy-research/policy-positions/healthy-schools-and-childhood-obesity/increasing-access-to-safe-drinking-water-ucm\\_475974.pdf?la=en&hash=020C152B5B78EA29F1D4FF526AFEB0D21DE27FC4](http://www.heart.org/-/media/files/about-us/policy-research/policy-positions/healthy-schools-and-childhood-obesity/increasing-access-to-safe-drinking-water-ucm_475974.pdf?la=en&hash=020C152B5B78EA29F1D4FF526AFEB0D21DE27FC4).

<sup>264</sup> “Flint Water Crisis Fast Facts.” *CNN*, 6 Dec. 2018, [www.cnn.com/2016/03/04/us/flint-water-crisis-fast-facts/index.html](http://www.cnn.com/2016/03/04/us/flint-water-crisis-fast-facts/index.html).

<sup>265</sup> Szymanski, Mike. “LAUSD Board Allocates \$20 Million to Get the Lead Out of Water.” *LA School Report*, 4 Sept. 2015, [laschoolreport.com/lausd-board-allocates-20-million-to-get-the-lead-out-of-water/](http://laschoolreport.com/lausd-board-allocates-20-million-to-get-the-lead-out-of-water/).

decades-old practice of flushing water fountains with borderline lead levels as a method to purge water with lead from old fixtures. Only fountains that test as lead safe without flushing will remain in service. Once the effort is concluded, LAUSD safety inspectors will include random fountain lead testing in annual school site inspections.

LAUSD's investment in its tap water infrastructure, effectuated on a voluntary basis, will continue to grow as it begins the work of installing new filling stations in each school and continues maintenance of roughly 40,000 drinking fountains. Soon, most of California's school children will receive the same water fountain testing benefits thanks to statewide legislation.<sup>266</sup> While large school districts like Los Angeles and San Diego have been progressive in implementing these policies, other school districts may lag in enforcing the new law, and vigilance is required.

The dedication of both California and LAUSD to promoting trust in tap water provides a useful model for other states to increase safe drinking water access for students, establish healthy hydration habits, and expand testing to all public fountains.

## **E. Access to Water for the Most Needy**

Those with poor quality water, whether due to contamination from pollution or the failure of improperly maintained or outdated infrastructure, and those with no access to water at all, are forced to purchase bottled water at a cost up to 3,000 times the cost of tap water.<sup>267</sup> Furthermore, the poor may be paying too much for both tap and bottled water. In Tulare County, California, where the wells are running dry and agricultural pollution contaminates the groundwater, a California Water Commission (CWC) a pilot study concluded that residents spend an average 3.9 percent of their household income on water expenses—significantly exceeding the EPA's recommended 1.5 percent affordability threshold.<sup>268</sup> Some households

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<sup>266</sup> "Lead Sampling of Drinking Water in California Schools." *California Water Boards, State Water Resources Control Board*, [www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/leadsamplinginschools.html](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/leadsamplinginschools.html). (Last accessed 16 July 2019.)

<sup>267</sup> "Bottled Water: 10 Shockers 'They' Don't Want You to Know." *CBS News*, 5 Oct. 2010, [www.cbsnews.com/pictures/bottled-water-10-shockers-they-dont-want-you-to-know/2/](http://www.cbsnews.com/pictures/bottled-water-10-shockers-they-dont-want-you-to-know/2/).

<sup>268</sup> McDonald, Amy. "Dried up: Poverty in America's Drought Lands." *Community Water Center*, 15 June 2014, [www.communitywatercenter.org/dried\\_up\\_poverty\\_in\\_americas\\_drought\\_lands](http://www.communitywatercenter.org/dried_up_poverty_in_americas_drought_lands).

spend up to 10 percent of their income on water alone; there are families living on \$14,000 a year that pay \$100 a month for contaminated tap water and must also purchase bottled drinking water. In some cases, monthly water costs exceed grocery expenses.<sup>269</sup>

California Governor Gavin Newsom called for a statewide Safe and Affordable Drinking Water Fund to pay for water system improvements for disadvantaged communities, calling it a “disgrace” that an estimated 1 million people in the state lack access to safe drinking water.<sup>270</sup> SB 200<sup>271</sup>, currently awaiting the Governor’s signature, provides the framework for funding safe drinking water solutions for California’s disadvantaged communities where local water districts do not have the means to fund necessary upgrades.<sup>272</sup>

In addition to updating poor water infrastructure, California is looking for ways to ensure that the increasing cost of water service is not borne by those least able to afford it. The State Water Resources Control Board (SWRCB) recommends a program that would provide low-income households with water service rate relief, similar to rate assistance programs already in place for electricity and gas service.<sup>273</sup> The SWRCB recommends funding the program through taxes or fees on bottled water or alcohol; unsurprisingly, the bottled water industry has already voiced objections.<sup>274</sup>

California should also fund tap water education to counteract widespread misinformation that predisposes people—particularly communities of color—to purchase bottled water. One study revealed that, even where tap water is safe, African American and Latino parents were three times more likely than white parents to give their kids bottled water due to their misinformed beliefs about tap water safety.<sup>275</sup> The economic disparity is alarming—while whites

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<sup>269</sup> *Id.*

<sup>270</sup> Tracy, Erin. “In ‘Surprise’ Trip to Stanislaus County, Gavin Newsom Discusses Fixes for Bad Water.” *The Modesto Bee*, 11 Jan. 2019, [www.modbee.com/news/article224311265.html](http://www.modbee.com/news/article224311265.html).

<sup>271</sup> California Senate Bill No. 200, *Drinking Water* (2019-2020), [leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=201920200SB200](http://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB200).

<sup>272</sup> “Statewide Safe Drinking Water Funding Solution.” *Association of California Water Agencies*, [www.acwa.com/trust/](http://www.acwa.com/trust/). (Last accessed 16 July 2019.)

<sup>273</sup> Pitzer, Gary. “California Officials Draft a \$600M Plan To Help Low-Income Households Absorb Rising Water Bills.” *Water Education Foundation*, 7 Feb. 2019, [www.watereducation.org/western-water/california-officials-draft-600m-plan-help-low-income-households-absorb-rising-water](http://www.watereducation.org/western-water/california-officials-draft-600m-plan-help-low-income-households-absorb-rising-water).

<sup>274</sup> *Id.*

<sup>275</sup> Gleick, Peter H. “Another Cost of Bottled Water: Environmental Injustice and Inequity.” *HuffPost*, 9 Aug. 2011, [www.huffpost.com/entry/another-cost-of-bottled-w\\_b\\_873974](http://www.huffpost.com/entry/another-cost-of-bottled-w_b_873974).

reported spending 0.4% of their household income on bottled water, African Americans and Latinos reported spending more than double that amount. For poor families, more money spent on water means less money spent on food, health care, and other crucial needs.<sup>276</sup>

Some Americans face even more extreme water access issues. While the UN Human Right to Water provides that “[e]veryone has the right to a water and sanitation services that is physically accessible within, or in the immediate vicinity of the household[,]”<sup>277</sup> many people do not have a home. For the homeless, the public streets must suffice for water accessibility, and cities should install hydration stations on municipal property and establish maintenance protocol. During a recent heat wave, Los Angeles provided temporary water fountains to the homeless community living on skid row.<sup>278</sup> Given that there are now more than 57,000 people who lack a “fixed, regular or adequate place to sleep” on any given night in Los Angeles County,<sup>279</sup> the provision of temporary fountains should be made permanent.

In LAUSD, 15,000 students are classified as homeless, and a great number above that are living on the brink of homelessness, sleeping in garages and temporary housing. One school, Telfair Elementary, in Pacoima has documented that 60 of its 700 students sleep in garages.<sup>280</sup> These students should have access to free tap water at refill stations not only at their schools, but also at parks and transportation hubs.

A human rights analysis means that decision-making should give priority to the neediest, especially those without access. “Disadvantaged Communities”—defined under California law refers to those who most suffer from a combination of economic, health, and environmental burdens, and the majority of which are urban<sup>281</sup>—must receive special attention in achieving

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<sup>276</sup> *Id.*

<sup>277</sup> “Human Right to Water.” *Supra*, note 243

<sup>278</sup> Roy, Jessica. “DWP Installs Temporary Sidewalk Drinking Fountains in Skid Row.” *The Los Angeles Times*, 5 July 2016, [www.latimes.com/local/california/la-me-ln-skid-row-drinking-fountains-20160701-snap-htlstory.html](http://www.latimes.com/local/california/la-me-ln-skid-row-drinking-fountains-20160701-snap-htlstory.html).

<sup>279</sup> Editorial Board. “Los Angeles’ Homelessness Crisis Is a National Disgrace.” *The Los Angeles Times*, 25 February 2018, [www.latimes.com/opinion/editorials/la-ed-homeless-crisis-overview-20180225-htlstory.html](http://www.latimes.com/opinion/editorials/la-ed-homeless-crisis-overview-20180225-htlstory.html).

<sup>280</sup> Lopez, Steve, “Whether Home Is a Van, a Motel or a Garage, L.A.’s Suburban Poor Children Learn to Survive.” *The Los Angeles Times*, 27 Nov. 2018, [www.latimes.com/local/california/la-me-california-poverty-suburbs-homeless-part3-20181127-htlstory.html](http://www.latimes.com/local/california/la-me-california-poverty-suburbs-homeless-part3-20181127-htlstory.html).

<sup>281</sup> *Supra*, note 246

their right to safe drinking water. In 2006, California voters approved Proposition 84,<sup>282</sup> a 5.4 billion dollar water bond that intended, among other related goals, to make safe drinking water available to all Californians. UCLA’s Institute on the Environment studied<sup>283</sup> the impacts of this bond and identified a number of shortcomings. In particular, it found that where priorities were not clearly stated, disadvantaged communities received less Prop 84 funding than did higher income communities, and less dense rural areas received equal funding to more densely populated urban areas. The researchers concluded that “more attention should be paid to establishing priorities, setting criteria, and using available data to shape strategies in order to achieve more equitable distribution of bond monies across communities.”<sup>284</sup> The results of the study should be considered informative for other communities and Californians in forming future policy to assure equitable water rights.

Providing for our population’s neediest is not only a matter of law, but one of ethics. “Meeting the needs and promoting the health of all persons is important, but equity and proportionate response are required in the face of limited resources to give priority to the least well off, those most immediately at risk, and those who are made vulnerable by past discrimination, exclusion, and powerlessness.”<sup>285</sup>

#### **F. Public Communication, “What’s in your Water?”**

At one time, the only difference between waters was mineral content from the natural environment of the source and any biological pathogens that may have been introduced. Today, the host of chemicals released into our environment through industry, mining, energy extraction, burning of fossil fuels, and large scale agriculture and consumer products have contaminated all of our natural resources, including fresh water. Such intrusion of various chemicals, through a variety of sources, complicates the ability of a government to not only ensure that safe drinking

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<sup>282</sup>“Storm Water Grant Program (SWGP)—Prop 84.” *California Water Boards, State Water Resources Control Board*, [www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/swgp/prop84/](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/swgp/prop84/). (Last accessed 16 July 2019.)

<sup>283</sup> “Environmental Bonds Should Equitably Benefit All Communities.” *UCLA Institute of the Environment and Sustainability*, [www.ioes.ucla.edu/news/prop84/](http://www.ioes.ucla.edu/news/prop84/). (Last accessed 16 July 2019.)

<sup>284</sup> *Id.*

<sup>285</sup> Jennings, Bruce et al. “Principles of Water Ethics.” *Minding Nature*, Vol. 2, No. 2 (Aug. 2009); see also *Center for Humans & Nature*, [www.humansandnature.org/principles-of-water-ethics](http://www.humansandnature.org/principles-of-water-ethics).

water is provided to the public, but that accurate communication of data about the purity of water is disseminated.

The United States maintains one of the safest drinking water supplies in the world, and our nation’s laws emphasize the importance of communicating that to the public.<sup>286</sup> As noted above, governmental water authorities are not only required to inform the public about the source of their water, but they are also mandated to test their water and publish reports on any contaminants contained therein.<sup>287</sup>

However, this information is not reaching all members of the public—including those who are not water agency customers, those who do not have computer access or understand the written materials, and those who drink bottled water with no reporting requirements to the public. Therefore, public information campaigns and school educational programs are necessary to increase public understanding and use of tap water.

When communicating about the right to safe drinking water, water quality, and treatments used to purify water, agencies should account for language barriers that can hinder

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<sup>286</sup> “Basic Information about Your Drinking Water.” *Environmental Protection Agency*, [www.epa.gov/ground-water-and-drinking-water/basic-information-about-your-drinking-water](http://www.epa.gov/ground-water-and-drinking-water/basic-information-about-your-drinking-water). (Last accessed 16 July 2019.)

<sup>287</sup> *Id.* In 1989, California enacted the first law in the nation requiring water purveyors to provide annual water quality reports to their customers. In 1996, amendments to this law established the first public drinking water right to know requirements. Thereafter, the EPA adopted a national right to know requirement ensuring that all tap water customers in America are sent detailed reports on the quality of their water. The following are some helpful drinking water resources:

- Water on Tap (2009) is a guide for individual consumers that describes, among other things, where drinking water comes from and how it is treated. Environmental Protection Agency. *Water on Tap: What You Need to Know*, 2009, [www.bottledwater.org/files/EPA%20Water%20on%20Tap%20%282009%29.pdf](http://www.bottledwater.org/files/EPA%20Water%20on%20Tap%20%282009%29.pdf).
- The Drinking Water Mapping Application to Protect Water Sources ([geopub.epa.gov/DWWidgetApp/](http://geopub.epa.gov/DWWidgetApp/)) is a mapping tool that enables users to access information regarding drinking water sources and systems by location
- Annual drinking water quality reports can be accessed here: “Consumer Confidence Reports.” *Environmental Protection Agency*, [ofmpub.epa.gov/apex/safewater/f?p=136:102:::~:](http://ofmpub.epa.gov/apex/safewater/f?p=136:102:::) (Last accessed 13 Aug. 2019.)
- A federal database on drinking water reports can be accessed here: Safe Drinking Water Information System (SDWIS) Federal Reporting Services.” *Environmental Protection Agency*, [www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information-system-sdwis-federal-reporting](http://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information-system-sdwis-federal-reporting). (Last accessed 13 Aug. 2019.)

The EPA provides many other drinking water-related resources here: “Ground Water and Drinking Water.” *Environmental Protection Agency*, [www.epa.gov/ground-water-and-drinking-water](http://www.epa.gov/ground-water-and-drinking-water). (Last accessed 13 Aug. 2019.)

comprehension and meaningful public participation. Without adequate and understandable information from water and public health agencies, many immigrants originating from communities without potable water remain unaware of governmental standards the safety of their local tap water.

Rather than receiving comprehensible information about tap drinking water from public health and water officials, people are inundated with bottled water marketing materials aimed at increasing profits rather than encouraging healthy habits. Public outreach initiatives like Tap Water Day in Los Angeles provide crucial information—communicated in both English and Spanish by representatives of water and public health agencies—about the superiority of tap water over other drinks to combat obesity, dental disease, and other health problems. Immigrants from Central and South America are often surprised to learn that the water delivered to them by tap is potable and safe. As stated previously, education about the benefits of tap water should be included in health and science education beginning in elementary school so that children grow up understanding the benefits of drinking tap water.

### **G. Drinking Water Week and Tap Water Day**

For more than 40 years, the American Water Works Association (an international non-profit scientific and educational association founded in 1881 to improve water quality and supply) has celebrated Drinking Water Week—“a unique opportunity for both water professionals and the communities they serve to join together in recognizing the vital role water plays in our daily lives.”<sup>288</sup> Drinking Water Week is celebrated the first full week in May each year.

Tap Water Day was established in 2015 as the first Thursday in May during Drinking Water Week to celebrate “[tap] water and public drinking fountains as a community asset for health, wellbeing and to protect our precious environment.”<sup>289</sup> Tap Water Day was formed by The California State Water Board, The California EPA, The American Waterworks Association,

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<sup>288</sup> “What is Drinking Water Week?” *American Water Works Association*, [www.awwa.org/Events-Education/Drinking-Water-Week](http://www.awwa.org/Events-Education/Drinking-Water-Week). (Last accessed 16 July 2019.)

<sup>289</sup> Tap Water Day, [www.facebook.com/pg/tapwaterday/about/?ref=page\\_internal](https://www.facebook.com/pg/tapwaterday/about/?ref=page_internal)

Los Angeles Mayor Eric Garcetti, Los Angeles Department of Water and Power,<sup>290</sup> The Los Angeles County Department of Public Health, The California Endowment, WeTap, and other partners to educate the public about California’s water delivery system as well as the safety and benefits of drinking the state’s tap water, with a special emphasis on promoting public drinking fountains.

Tap Water Day brings together a strong coalition of health, water, and education departments, regulators, nonprofits, civic leaders, and the public to celebrate tap water and our public drinking fountains. Tap Water Day has been utilized to showcase the history of the California Aqueduct, the high tech water treatment systems employed in California, and the unveiling of new hydration stations on public property.<sup>291</sup> “Pedestrians and cyclists deserve water and shouldn’t have to overpay for it in wasteful plastic bottles,” said Los Angeles Mayor Eric Garcetti, speaking about Tap Water Day. “Water bottle filling stations allow everyone to enjoy as much water as they need to hydrate while protecting the environment.”<sup>292</sup>

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<sup>290</sup> LADWP is the largest municipally owned and operated retail water utility in the country, serving a population of more than 4 million residents and an area of 472 square miles.

<sup>291</sup> “Mayor Garcetti and LADWP Celebrate Tap Water Day With Tours of Los Angeles Aqueduct Filtration Plant.” *Los Angeles Department of Water and Power*, [www.ladwpnews.com/mayor-garcetti-and-ladwp-celebrate-tap-water-day-with-tours-of-los-angeles-aqueduct-filtration-plant/](http://www.ladwpnews.com/mayor-garcetti-and-ladwp-celebrate-tap-water-day-with-tours-of-los-angeles-aqueduct-filtration-plant/). (Last accessed 16 July 2019.)

<sup>292</sup> “LA Celebrates Second Annual Tap Water Day to Highlight Benefits of City’s Clean Drinking Water.” *Los Angeles Department of Water and Power*, [www.ladwpnews.com/la-celebrates-second-annual-tap-water-day-to-highlight-benefits-of-citys-clean-drinking-water/](http://www.ladwpnews.com/la-celebrates-second-annual-tap-water-day-to-highlight-benefits-of-citys-clean-drinking-water/). (Last accessed 16 July 2019.)





## **VII. POLICY RECOMMENDATIONS TO INCREASE PROTECTION OF DRINKING WATER, PROMOTE PUBLIC ACCESS TO WATER ON TAP, AND REDUCE PLASTIC POLLUTION**

Drinking water is a basic human right that must be managed with great care by government agencies at every level to ensure safety and public access—now and for future generations, considering impacts from climate change and pollution. The Public Trust Doctrine offers a legal theory that ensures both water quality and quantity will be preserved. The human right to water, as set forth by the United Nations and the State of California, protects the individual right to safe drinking water, especially for disadvantaged community members.

A reinvestment in public water works should focus on the water fountain to interface with the public. Water fountains provide the most sustainable, healthy, and economically just means of hydrating people in the public forum. Children have a special need for safe drinking water for their development, and schools should be a priority for fountains and tap water education to create the next generation of water stewards.

Also, drinking fountains should be assessed, maintained and installed where needed in parks, public transportation hubs, and other public places so that water can be accessed at all times. Drinking fountains provide hydration for the public outside of their homes and those in

dire straits, such as those without running water at home. Public education about the benefits of tap water and where to find fountains is necessary to protect the public from dehydration and disease. Continual maintenance and testing of water fountains, with open safety reporting, is needed to ensure public trust in fountains.

#### **A. Invest in Public Hydration Stations and Maintenance Programs**

1. Invest in public infrastructure, pipes, and public hydration stations for the delivery of safe drinking water, with a special focus on urban centers (which represent the majority of the population), particularly schools, parks, transportation hubs, and other public property that can be accessed at all times.

2. The international building code requires 1 drinking fountain per 100 people on school campuses. This regulation should be enforced and expanded to cover parks and transportation hubs so that all vulnerable populations, including children, can obtain water at any time.

3. For schools, implement the recommendations of The Harvard School of Public Health Prevention Research Center in “Keep it Flowing: A Practical Guide to School Drinking Water Planning, Maintenance and Repair.”<sup>293</sup>

4. Revise building and plumbing codes to require periodic water quality (including lead) testing and grading of public hydration stations and water fountains, as is required for restaurants under California regulations.

#### **B. Increase Public Access to Tap Water**

1. Require water availability in all permitting decisions for both temporary and permanent events. Temporary Event Permits: where there is access to fire hydrants, water can and should be provided free of charge; this should be required. When no fire hydrant access is available, water trucks can be rented from the water agency.

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<sup>293</sup> “Keep it Flowing: A Practical Guide to School Drinking Water Planning, Maintenance & Repair.” *Supra*, note 262

2. Restrict or ban sales of bottled water on school campuses, in public parks, and at public transportation venues. Instead, invest in hydration stations.

3. Make Tap Water the drink of choice in all school meal programs.

**C. Legislate to Level the Regulatory Playing Field for Tap Water and Bottled Water**

1. Providing bottled water has serious environmental impacts and should be part of any Environmental Impact Statement. Any evaluation should fully consider the full costs of bottled water on a project including water waste, carbon, plastic waste, fuel, and expense over time.

2. Require bottled water to mirror the EPA requirements for testing and reporting that municipal water follows.

3. Tax plastic bottles as they externalize health and pollution costs to society.

**D. Require Tap Water Education in Schools and Public Awareness Campaigns about the Benefits of Tap Water**

1. Fund, create, and execute multilingual public education campaigns on tap water to promote appreciation, care, and use. If we do not value public tap water as a culture, we may lose this resource.

2. Promote locations of public hydration stations through campaigns that showcase free fountain finding apps.

3. To effectively shift student preferences from sugary beverages and bottled water to tap water consumption, fund Tap Water Programs including fountains, reusable bottles, and education in schools beginning with Kindergarten. Drinking water education should begin with the water cycle, the source of drinking water, treatment of water, systems for delivering drinking water to our taps, and the health benefits of consuming tap water.

4. Adopt Tap Water Day at state and federal level for education about tap water.

**E. Legislate to Protect Water Sources and Water Infrastructure**

1. Follow California's lead and recognize the Human Right to Water in state and federal law. Adopt the "need to consider" water as a human right approach for all agencies, as California has.

2. Support legislative recognition in state and federal law that the Public Trust Doctrine covers both groundwater and all other fresh water.
3. Adopt the Precautionary Principle regarding the protection of water resources.
4. Amend TSCA to regulate the six categories of chemicals known to harm human health as recommended by the Green Science Policy Institute.<sup>294</sup>
5. Pass The Fracturing Responsibility and Awareness of Chemicals Act.<sup>295</sup>
6. Create a National Oversight of Water Systems through a U.S. Water Agency.
7. Support Federal Legislation to Curb Plastic Waste Production.<sup>296</sup>



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<sup>294</sup> “Six Classes.” *Supra*, note 126

<sup>295</sup> United States Cong. House. H.R.2012 - *Fracturing Responsibility and Awareness of Chemicals Act of 2017*. 115<sup>th</sup> Cong. (2017-2018). [www.congress.gov/bill/115th-congress/house-bill/2012](http://www.congress.gov/bill/115th-congress/house-bill/2012).

<sup>296</sup> “Guest Blogger Divya Rao: Sen. Udall and Rep. Lowenthal Champion New Legislative Effort to Curb Plastic Waste Pollution.” *Legal Planet*, [legal-planet.org/2019/07/18/guest-blogger-divya-rao-sen-udall-and-rep-lowenthal-champion-new-legislative-effort-to-curb-plastic-waste-pollution/](http://legal-planet.org/2019/07/18/guest-blogger-divya-rao-sen-udall-and-rep-lowenthal-champion-new-legislative-effort-to-curb-plastic-waste-pollution/).