

Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

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The Costs of Bottled Water

Walking into Costco, I invariably see families with their giant carts stacked high with large cases of bottled water. In addition to the better known Aqua Vida, Aquafina, Arrowhead Mountain Spring, Crystal Geysler, Dasani, Evian, Fiji, Nestle, Perrier, and San Pellegrino, there are well over 100 other brands of bottled waters. Costco only carries nine of these, however.

Decades ago, plastic water bottles didn't exist in the U.S. and most people looked for a drinking fountain when they got thirsty. With the development of polyethylene terephthalate (PET), which most plastic water bottles are made of today, the bottled water industry grew fast.

Sales of these clear, lightweight, and convenient plastic bottles of water took off in the mid-1980s. Consumption by the average American nearly tripled from 4.5 gallons/year in 1986 to 12.7 gallons/year in 1997. This trend has continued and total US consumption in 2012 reached 9.6 billion gallons.

Americans drink more bottled water than milk or beer. We spent \$11.8 billion on these cute little bottles in 2012, and drank on average about 30 gallons apiece. Depending upon where you might be, Costco or a sporting event, you can pay 50 cents to \$3.00 for a pint bottle, or \$4 to \$24 a gallon, 4000 to 24,000 times more than tap water. If you had to pay the same cost for a pint of gasoline as you pay for water at some snack counter, it would take almost \$300 to fill up a 12-gallon tank!

To put this thirst for bottled water in perspective, a thousand people in the United States buy and open up a plastic bottle of water every second. One thousand bottles are then emptied and thrown away every second, or 85 million bottles a day.

Why are more and more Americans increasingly addicted to those convenient bottles? Well, mostly its fear of tap water, taste, style, and convenience.

Perhaps surprisingly, despite the names on many brands ("mountain spring"), almost half of all bottled water sold in the U.S. is filtered tap water. Maybe even more surprising, tap water in the U.S. is subject to tighter regulations than bottled

water, simply because EPA standards for tap water are stricter than those of the FDA, which governs bottled water.

Not long ago, the Natural Resources Defense Council tested 1000 bottles of 103 brands of bottled water, and while most of them were found to be fine, 1/3 had contamination beyond allowable tap water limits, including bacteria, arsenic and synthetic organic compounds.

Our tap water is treated very thoroughly and is tested daily for over two dozen chemicals and quality characteristics. For the city of Santa Cruz this information is all available on-line (<http://www.cityofsantacruz.com/home/showdocument?id=37720>).

As far as taste goes, fill a water bottle from the tap, put it in the refrigerator for a few hours and it's as good as any bottled water. For style and convenience, it's pretty easy to refill a reusable bottle from the tap, and more and more people are now aware of the environmental impacts of bottled water. It's no longer seen as stylish to carry around a plastic water bottle from some exotic place like Fiji or Iceland.

95% of the cost of bottled water is for its bottling, packaging, shipping, marketing, retailing and profit, and the Earth is paying the price. In 2012, the 9.7 billion gallons of bottled water required about 35 million barrels of oil to produce the water and another nearly 60 million barrels to transport it. It takes a lot of fossil fuel to move water from Fiji or France to the USA.

Estimates are that eight out of every ten bottles are thrown out after they are emptied, with only two ever being recycled. In 2012, the bottles thrown out that ended up on landfills in the USA, if they were all pint bottles and stacked end-to-end, would reach to the moon and back 15 times. That's a lot of wasted plastic and energy, but consumption continues to increase.

While there are a number of places in the world where using bottled water is the safest alternative when you are thirsty, Santa Cruz County isn't one of those places. We have high quality and extremely safe water, at a very low cost, right out of a convenient tap that you can refill your favorite container with over and over again.