

# Greenwich Sentinel

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## Water: Back to the Tap?



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With towns like San Francisco and Concord, Mass., banning the sale of bottled water to protect the environment, perhaps we need to take a further step and test the waters, so-to-speak.

Designer waters, as I call them, are on the rise with claims of purity, alkalinity and great taste, but not all water is created equal. As a kid, we drank water right from the tap and thought nothing of it. Today, we would think twice about doing this, considering the chemicals found in most water systems.

There are many pitchers and filters from which to choose, but most are only Band-Aids against impurities. Installing home filtration systems is quite popular to reduce toxins, especially chlorine from showers, laundry, dishwashers and faucets, but they do not improve acidity for drinking water. Did you know that most bottled water tests at an acidic 2 to 4 pH and tap waters range 5 to 6 pH.

On a simple pH scale, the range is 1 to 14. Acidic ranges from 1-6; neutral is 7; and alkaline goes from 8-14.

The trend is toward alkaline water ionizers that attach to faucets and have powerful filters that take out most harmful chemicals, while providing alkaline (pH) water. Elite athletes have long enjoyed the benefits of alkaline water and have units installed in their clubhouses and homes for pH, purity, hydration and detoxifying health benefits.

Some homeowners and businesses have plastic water bottles, cases, or large jugs for canister-type dispensing delivered to them; others purchase plastic water bottles from the local grocery. But I often wonder the path these bottles took to get to your home or in your hands. What were the temperatures, hot or cold and did this cause leeching of chemicals into the water? Some harmful contaminants to consider are:

**BPA:** Bisphenol A, or BPA, is an estrogen-mimicking chemical linked to health and behavioral risks such as altered immune system function, early puberty in girls, fertility problems, decreased sperm count, prostate and breast cancer, diabetes and obesity.

**Phthalates:** These are endocrine-disrupting chemicals linked to many developmental and reproductive issues including: reduced sperm counts, testicular atrophy and liver cancer.

**Other Contaminants:** Since 40 percent of bottled water is from the tap, it could include exposure to fluoride, chlorine, arsenic, aluminum, disinfection byproducts, and prescription drugs that are flushed down toilets or dumped into landfills that are leached into rivers.

We've heard the conflicting data about bottled water. Some say it's better than drinking tap water, that it comes from special mineral springs, has added vitamins and electrolytes; more recently, some say it has a high pH. On the other side, we hear that bottled water is just filtered tap water packaged to appear better, that plastics destroy the environment, that 50-plus million water bottles are discarded daily, with only about 10 percent being recycled; that enormous amounts of fuel are used to transport the bottles. If some bottled water is just filtered tap water, then are we still drinking the very chemicals we are trying to avoid from the tap?

What we know that water is essential to hydrate the 75 trillion or so thirsty cells in our body; but did you know that each cell has a protein portal called an aquaporin? Peter Agre, molecular biologist at Johns Hopkins University, was awarded the 2003 Nobel Prize in Chemistry (shared by Roderick MacKinnon) for his discovery of aquaporins. Aquaporins are water-channel proteins that move water molecules through the cell membrane.

Agre wrote: "The center of the aquaporin has a 20-Å trim span where water transits the pore in single file. The narrowest diameter of the pores is 2.8 Å—just big enough for a single water molecule. A fixed positive charge on the adjacent arginine side chain will repel protons. The water molecules then are spaced within the pore at intervals so that hydrogen bonding cannot occur between them. A second barrier exists in the center of the pore, where an isolated water molecule will transiently form hydrogen bonds to the side chains of two highly conserved asparagines residues. This provides a very interesting mechanism—one that allows water to move with no resistance."

That said, alkaline ionized water units are an emerging environmental trend that individuals and municipalities are looking to, not only for the health benefits but to be kind to the planet by reducing plastics. Questions that remain are: Should we drink tap water without proper filtration? Would you knowingly drink something acidic?

I urge you to research and decide for yourself. The bottom line is to find out what is in your well or public water, test your drinking water with pH drops, and always try to drink from glass containers.

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