

## Worth Their Salt? Pools Where Chlorine Isn't King

By SHALINI RAMACHANDRAN



Jason Arthurs for the Wall Street Journal

A pool on the Fort Bragg, N.C., military base is one of a growing number of 'saltwater' pools in the U.S

A growing number of pool owners, both private and public, blame the chlorine in the pool—and are trying so-called saltwater pools and other new technologies that promise disinfection with fewer annoyances and maintenance hassles than standard chlorine additives. First introduced to U.S. swimming pools in the 1920s, chlorine is credited with helping arrest the spread of disease-causing bacteria and viruses.

Kurill Brindle and her daughters, 10-year-old Britton and 6-year-old Devlin, love the saltwater pool the Fort Bragg, N.C., military base they live on installed this spring. “The water feels soft on your skin,” and her daughters don’t have to wear goggles underwater anymore, Ms. Brindle says.



They remember the chlorinated indoor pool they used to swim in when they lived at Fort Bliss in Texas. “The girls’ swimsuits would get kind of worn and you’d smell like chlorine on your hair and skin,” says Ms. Brindle.

So-called saltwater pools are the most popular alternative to conventional chlorine systems, making up about 13% of the roughly 10 million residential and commercial pools in the U.S. in 2010, according to Duluth, Ga., pool-market-research firm P.K. Data Inc.

The term saltwater is a little confusing. The pools don’t actually contain seawater and are only 8% to 9% as salty. Rather, salt reacts with electricity at the source of the water flow to generate high concentrations of pure chlorine that are then dispersed through the pool. This doesn’t allow the formation of itch- and stink-producing byproducts that conventional chlorine pools produce.

Other unconventional alternatives to chlorine include systems that release ozone gas or shoot beams of ultraviolet light through water to kill bacteria, viruses and algae. Others use streams of charged metal atoms to kill nasties. These systems still require occasional dosing with chlorine or other chemical disinfectants, but as little as 10% of what conventional pools call for, say manufacturers and distributors.

Lynn Trahan, a homeowner in The Woodlands, Texas, says he was turned off by how saltwater pools still use chlorine and picked UV-light technology when he revamped his home pool three years ago. Now, he uses only 0.2 part chlorine per million parts water—down from 1.5 ppm previously—as an added disinfectant in the water. “It’s crystal clear,” he says.

The cost of alternative disinfection systems can be high, from \$900 for a saltwater chlorine generator for a home pool to as much as \$8,000 for a residential ozone generator. The systems can save money over the long term, however. Traditional liquid and tablet chlorine costs up to \$700 a year for a residential pool owner. Periodic so-called shock treatments to raise the chlorine level can be \$150 and higher for a home pool, depending on pool size and use.



Despite these up-front costs, sales of alternative systems have shot up over the past few years. Andrew Rupnow, president of the Ozone Co. in Madison, Wis., says ozone-system sales rose 56% last year. Daniel Lee, chief executive of Georgetown, Texas-based SpectraLight Technologies Inc., which manufactures UV-light generators, says sales have more than tripled over the past two years. Neither would specify sales figures.

No federal laws regulate pool disinfection, but most states mandate chlorine levels for commercial pools at or above the Atlanta-based Centers for Disease Control and Prevention's recommended one to three parts per million of water.

Traditional chlorine continues to hold 80% to 85% of the swimming-pool market share, according to P.K. Data.

"We would be seeing a lot more outbreaks of E.Coli and Norovirus if we didn't chlorinate," says Michael Beach, the CDC's associate director for healthy water. The CDC says it isn't aware of any outbreaks caused by depending solely on alternative methods, the byproducts of which haven't been closely studied yet.

Some recent studies indicate the effects of conventional disinfection methods may go beyond just irritation.

A study published in the journal *Environmental Health Perspectives* in November found that a chlorinated pool in Barcelona generated a chemical byproduct suspected of increasing risk of asthma in elite swimmers and others capable of mutating DNA, says Susan Richardson, the U.S. Environmental Protection Agency chemist who helped lead the study.

That said, while research has found increased asthma diagnoses among elite swimmers, researchers have found no consistent link between pool use and childhood asthma. A 20 country study over 10 years by the World Health Organization published in 2006 concluded that any risk from exposure to chlorination byproducts was small, and had to be weighed against the risks of untreated water and the health benefits of swimming.

"The chlorine itself does not pose any known health risks," so long as chlorine and pH levels are kept within recommended ranges, says Brian McKenna, a spokesman for the Chlorine Chemistry Division, a trade association in the American Chemistry Council.

A new health code being developed by the CDC in conjunction with the aquatic industry, to be released in parts over the next year, could herald changes to chlorine standards by legitimating the use of ozone and ultraviolet light as secondary disinfectants.

Tom Lachocki, CEO of the National Swimming Pool Foundation, a nonprofit that funds pool research, says about 80% of new, large water parks and aquatic facilities feature UV-light generators. These are used to improve air quality in indoor swimming pools and protect swimmers against cryptosporidium, a chlorine-resistant parasite that can cause gastrointestinal ailments.

Steve Sherman, owner of Lafayette, Calif.'s Sherman Swim School, was an early adopter, installing an ionizer alongside his chlorine system 12 years ago, allowing him to reduce the use of chemicals. "We don't have as much of that dry skin, burning eyes and dry hair you find at other pools," he says. "This is way softer on the body and helps minimize the effects of chlorine on the students."