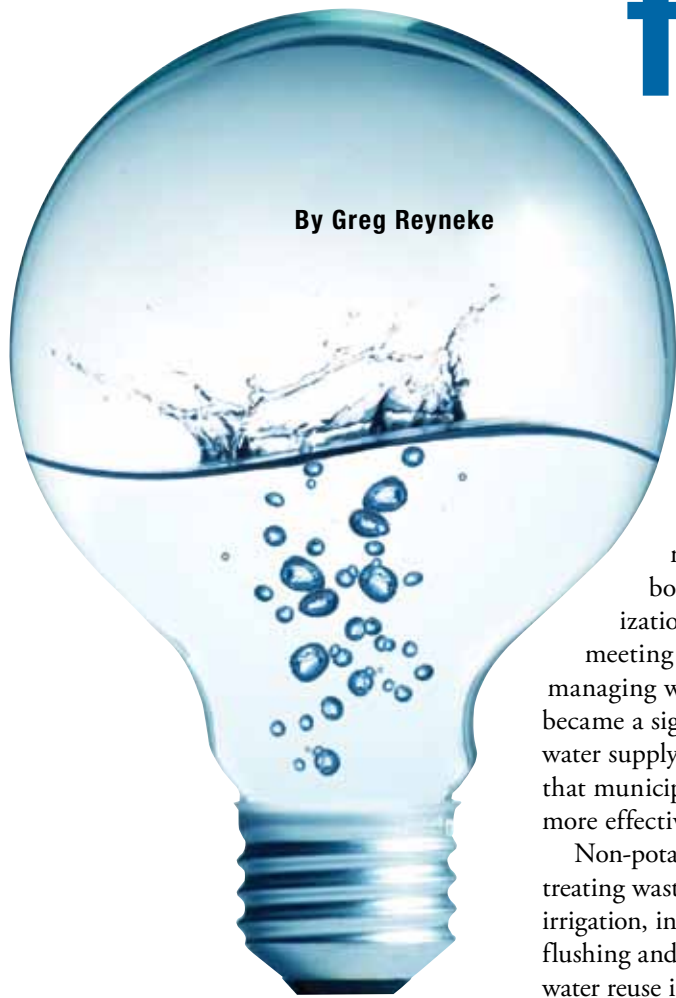


# Inspiration for Innovation

By Greg Reyneke



Ion exchange softener bans to stimulate development of new treatment technologies

There is a finite amount of available water on our planet, and it is becoming an increasingly scarce resource. As populations increase, significant amounts of water are required to maintain modern life. After the baby boom and massive urbanization of the 20<sup>th</sup> century, meeting increasing demand while managing water quality expectations became a significant challenge for the water supply industry, which realized that municipal water should be reused more effectively.

Non-potable water reuse involves treating wastewater for agriculture, irrigation, industrial cooling, toilet flushing and fire protection. Indirect water reuse involves directing treated wastewater to reservoirs or back into the ground, where it will eventually percolate into aquifers to be used “as new.” Direct water reuse involves advanced filtration and purification processes to make wastewater drinkable—the infamous “toilet to tap” process.

## Shutting Down Softeners

When reusing water, especially for irrigation, it is important to keep salinity and total dissolved solids below critical levels.

Decades ago, California water managers noticed a progressive increase in chlorides and other conductive ions in irrigation water, and decided that something had to be done to minimize the negative impact on agriculture. Lawmakers, utility managers and activists quickly identified an easy-to-target, potential contributor to increasing chloride levels: automatic salt-based ion exchange water softeners.

The Santa Clarita Valley drew its

“line in the sand” in 1961, banning automatic softeners in businesses. In 2003, it made news again with the nation’s first ban on the installation of new residential automatic water softeners. The Santa Clara River Chloride Reduction Ordinance (Measure S) of 2008 required removal of all residential automatic water softeners by June 30, 2009. Supporters were led to believe that if Measure S did not pass, sewer rates would increase exponentially to finance a massive desalination system.

The measure passed, and, according to the water district, approximately 8,000 residential softeners have been removed since then. In spite of Measure S passing, sewer rates subsequently increased almost threefold, prompting former California state Sen. George Runner to pen his now-famous “bait and switch” letter. It is still unclear whether these bans have improved salinity issues, but legislators in other areas continue to propose similar bans, and environmental activists continue to berate salt-based ion exchange water softeners.

Lawsuits were filed, further legislation proposed and the water improvement industry, led by the Water Quality Assn. and the Pacific Water Quality Assn., fight to protect consumers from this type of legislation and appliance bans.

## Pending Issues

Water scarcity is a critical issue in arid regions like Southern California. Many other communities across the U.S. also are experiencing water shortages; more than 30 states currently face serious shortages, and potable water demand is beginning to outpace supply in prominent cities like Los Angeles and Las Vegas. As a result, water districts will continue to implement recycling and reuse strategies to meet demand. Wastewater salinity will

continue to be an issue for the water quality improvement, management and reuse industries and further legislative attempts against salt-based water softeners will be inevitable. It is not a matter of if, but rather when new regulations will be proposed.

## New Product Opportunities

In response, the water quality industry must do what American industry does best: innovate.

In a market-driven economy, consumers influence product development trends with purchasing dollars. Fueled by innovative water quality improvement dealers seeking a competitive edge, ion exchange water softeners have become more efficient over the past 50 years in response to consumers’ desires for more salt-efficient technologies. A look at today’s marketplace offerings shows continuing improvements in salt-based softening technologies like proportional, variable and fractional brining; widespread adoption of upflow (countercurrent) regeneration methods; improvements in structured-matrix resins; and resin-exhaustion sensors—all of which have been driven by consumer demand and dealers who truly care about offering new water treatment products to their clients.

Salt-based ion exchange is one of the simplest, cheapest softening technologies in the marketplace. Water industry experts continue to teach the environmental benefits of water softening, which include greenhouse gas and surfactant usage reduction and energy efficiency, as well as other benefits such as extending the life of appliances, clothing and plumbing infrastructure. Today, salt-based ion exchange technology also is used to remove heavy metals, arsenic, nitrates and a host of other ionic contaminants.

Dealers also are taking a layered

approach to water quality management, in which water is treated to different levels for different uses in a home or business to maximize brine efficiency and minimize environmental impact. Other dealers are helping customers identify why they want a softener, and introducing them to proven salt-free scale control technologies when appropriate.

New technologies naturally displace outdated products, so it is no surprise to see great leaps forward in salt-free softening technologies like membrane separation and electrodeionization. It is not unrealistic to predict that, within the next 10 years, more than 25% of the residential softening market will comprise salt-free technologies.

To keep up with changing market needs, the water quality industry should strive to develop more

efficient treatment products, inspect and calibrate installed systems regularly, and embrace viable alternative technologies. Most importantly, the industry should be more vocal in communicating the real benefits of water quality improvement technologies to consumers, legislators and environmental groups—we are all legitimate stakeholders in the future of our planet. *wqp*

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