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Help Water Supply with Better Softening Solutions

by Peter Fox
December 22, 2007 for the *Arizona Republic*

This article is one in a series of articles contributed by Arizona State University's Global Institute of Sustainability. The institute catalyzes and advances interdisciplinary research and education on environmental, economic and social sustainability.

As a child growing up on the outskirts of Chicago, I recall trips to the country where drinking water from wells always tasted odd. My relatives would try to convince me that drinking well water was good for me and that I should learn to enjoy the taste. Why did the water taste funny? The well waters were rich in calcium and magnesium. As it turns out, the definition of water hardness is primarily based on levels of these two minerals and those well waters were very hard. It was also quite logically good for me because hard water helps people get their daily recommended intake of calcium and magnesium, and studies have confirmed this fact.

Unfortunately, hard water can cause aesthetic problems beyond bad taste. Softening water can be an absolute necessity for very hard waters put into distribution systems. The scale formed from precipitating calcium carbonate can fill water pipes with cement-like material. The drinking waters in the Phoenix area are moderately hard and do not require centralized softening. However, the water is hard enough to limit the effectiveness of soaps and cause scale formation in hot-water heaters, sinks and toilets. Therefore, most people want soft water, and almost all new homes have ion-exchange water softeners. This solution presents a problem, as salt is necessary to regenerate the water softeners and the resulting salt is discharged to the sewer and passes through treatment plants, causing salt levels to build up in our groundwater. In addition we rely on the Colorado and Salt rivers for our water supply, and these salt-rich waters exceed the USEPA aesthetic standard for salt. In new communities, where most homes are equipped with water softeners, the salt levels in the water entering the sewer can almost double compared with the original water supply. This increase can affect water-reclamation processes and render the water useless for irrigation, which is the primary method for water reuse. Consequently, golf courses are required to use salt-tolerant grasses and add chemicals to offset the impacts of the water softeners.

Our Valley is actually a basin that holds a tremendous supply of groundwater. As we import surface water to the basin from the Colorado, Salt and Verde rivers, we also import dissolved salts. As we use and reuse the water for irrigation and other uses, most of the water evaporates. The Central Arizona Salinity Study revealed that over 1 million tons of salt (700 pounds per person) are accumulating in our region every year, and this salt ends up in our groundwater. The growing use of ion-exchange water softeners is accelerating this accumulation. As the salt concentrations increase, the energy required to remove salt from the water increases. The process to remove the salt also loses up to 15% of our precious and limited water supply to waste.

To sustain our future water supply requires concerted effort between water suppliers and users. Identifying alternatives to traditional ion-exchange water softeners is the first step. Replaceable ion-exchange resins and capacitive deionization can prevent salt from entering the water supply. Water suppliers

can partially soften water before distribution, eliminating the need for water softeners at home. Every solution may have drawbacks or increased costs, but we must not lose sight of the long-term costs of maintaining the status quo. The problem might not have the magnitude of global warming, but many civilizations have declined because of similar salt buildup.

For tips on improving the taste of your water go to: www.tapintoquality.com.

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