



Salinity Fact Sheet

Salinity and Water Softeners

Controlling Salt from Water Softeners to Better Manage Salinity in Water Supplies

The use of residential self-regenerating water softeners to treat water hardness is one of the contributing factors to high levels of salinity in our water supplies.

Controlling all sources of salinity is necessary to protect water quality – and residential self-regenerating water softeners are considered a leading controllable source of salinity.

What Is Salinity?

Salinity is viewed as one of the most under-recognized water-quality threats in the southwest. Referred to as total dissolved solids (TDS), salinity is the concentration of dissolved mineral salts in water. Typical salts include calcium, magnesium, sodium, sulfate, and chloride.

Agricultural and urban activities have increased salinity in many groundwater basins, impairing the quality of fresh-water. In fact, groundwater basins in California have been abandoned in the past because of high salinity levels.

Other sources of salinity include natural weathering process, agricultural and storm runoff, and urban waste discharged into the wastewater collection system, such as household cleaning products and industrial and commercial brines.

Impacts of Salinity

Salinity deteriorates residential, commercial, and industrial appliances and fixtures. Some industries also require onsite treatment to address salinity.

High levels of salinity can also affect the ability to produce and use recycled water – considered a critical resource in augmenting California’s water supplies – as utilities are denied permits to recycle by California’s Regional Water Quality Control Boards if salt levels impair beneficial uses.

Salinity Levels in Water Supplies

Salinity is commonly expressed as milligrams per liter (mg/L) or parts per million (ppm). Drinking and recycled waters with salinity levels of more than 1,000 mg/L could be considered impaired for certain applications.

Natural Source Water	Total Dissolved Solids (mg/L)
Snowfall and Rainfall	5 to 10
Snowmelt and Rainfall Runoff in Watersheds	50 to 100
Sacramento River at the City of Sacramento	120
Groundwater	200 to 10,000
Colorado River at Imperial Dam	750
Ocean Water	35,000

How Residential Self-Regenerating Water Softeners Increase Salinity

Self-regenerating water softeners are used to remove calcium and magnesium (the minerals responsible for hardness) from water, which reduces scale and can increase the useful life of household plumbing and appliances.

As part of the regeneration process, a strong brine solution (made of common salt) is flushed through the system to remove calcium, magnesium, and other minerals that accumulate in the water softener. The byproduct is a brine waste, which is typically discharged into the wastewater collection system.

On average, a single residential self-regenerating water softener can discharge a pound of salt per day and between 70 to 300 gallons of water per week when it regenerates and “flushes” away the brine.

In some areas, the largest source of salinity from residences comes from self-regenerating water softeners. In general, 20 to 25 percent of the homes in California have water softeners.

Salinity Inhibits Water Recycling

Recycled water – the product of highly treated municipal wastewater – is a critical resource in expanding California’s water supplies.

Recycled water provides a safe and reliable source of high-quality water that can be used for agricultural and landscape irrigation, commercial laundries and car washes, industrial processes, dust control, and groundwater recharge.

Using recycled water for these purposes saves our scarce potable supplies. We also need less imported water when we augment our water supplies with recycled water.

However, higher salinity levels in wastewater impair the ability to produce usable recycled water, as the technologies to remove salinity are costly. Furthermore, higher salt levels can limit the beneficial uses of recycled water.

For instance, throughout California, plants at parks, golf courses, and school grounds are irrigated with recycled water. Unfortunately, the salts associated with salinity can affect the growth and health of plants, causing damage like leaf burn, leaf drop, and plant death. In addition, the salts from recycled water used for irrigation can accumulate within a groundwater basin.

What Is the Solution?

Everyday citizens can significantly decrease salinity by changing or eliminating their use of self-regenerating water softeners, which can average a pound a day of salts flushed into the wastewater collection system. Options include:

- **Removing the water softener:** Hard water poses no health hazard. Also, by removing your water softener system, you can save thousands of gallons of water per year, depending on the water quality, age, and type of water softener you own.
- **Portable exchange:** Devices are available that provide the exact same service as a self-regenerating water softener. The difference is that the water softening company discharges the salt brine into a permitted facility where the brine will not affect water supplies.
- **Salt-free anti-scaling devices:** The water softener industry is actively developing salt-free devices that inhibit scale, which are now becoming available on the U.S. market.

When It Comes to Salinity in Water Softeners...

- **The salts from self-regenerating water softeners contribute to increased salinity in our water supplies, inhibiting water recycling for irrigation and other uses, as well as impacting beneficial uses, such as drinking water and agricultural irrigation.**
- **It makes sense to remove salinity at the source rather than remove it at the treatment plant, which would require additional technologies and significantly raise utility rates.**
- **Reducing salinity from residential self-regenerating water softeners is an important first step toward protecting the quality of existing water supplies and providing usable recycled water to address the water needs of California.**

The Southern California Salinity Coalition (SCSC) is a nonprofit organization formed in 2002 by water and wastewater agencies in Southern California to address the critical need to remove salt from water supplies and to preserve our water resources. SCSC focuses on research and outreach activities that address the need to control or reduce salinity in drinking water, wastewater, and recycled water. For more information, please contact Jeff Mosher, SCSC Administrative Director, at jmosher@nwri-usa.org or phone (714) 378-3278.

Southern California Salinity Coalition

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