Where Does Total Dissolved Solids Come From?

Water Softeners

Water softeners are typically used to remove calcium and magnesium minerals from hard water. The removal of these two minerals helps with the effectiveness of laundry detergents, internal pipe scaling, and taste. Calcium carbonate is the main measure of the hardness in water, and the levels of classification are shown on the chart. Cherokee Metropolitan's drinking water falls in the 'Moderately Hard' classification at an average of 100 mg/l.

Water Hardness Scale		
Grains/Gal	mg/l & ppm	Classification
Less than 1	Less than 17.1	Soft
1 - 3.5	17.1 - 60	Slightly Hard
3.5 - 7	60 - 120	Moderately Hard
7 - 10	120 - 180	Hard
Over 10	Over 180	Very Hard

Water softeners work by exchanging calcium and magnesium ions with sodium ions (salt). This exchange happens in the resin cylinder that contains plastic beads with a negative charge. This comes into play because calcium, magnesium and sodium all have positively charged (+) ions. As water passes through the negatively charged resin it attracts the stronger positive ions contained in the calcium and magnesium. Sodium ions are then released into your drinking water. Once the resin is saturated, there is a strong sodium (salt) based flush cycle, which strips away the stronger ions by scouring. The flush cycle and subsequent rinse cycle use the sodium based water, and leave the lesser of the ions coating the resin, starting the cycle again. These cycles increase the Total Dissolved Solids (TDS) that go down the drain and to the Water Reclamation Facility, (a.k.a.wastewater treatment facility). Cherokee's Board of Directors passed Resolution 14-06 to prohibit water softeners within the district. This resolution was set in place to lessen the impact of TDS from reaching the treatment facility.

Typical Softener System