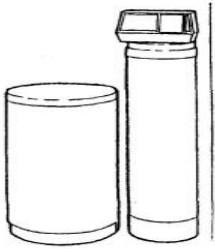


## Water Softeners and the Environment



### Do you use a water softener?

*If your answer is "yes," this brochure contains information for you on how to optimize its usage, resulting in lower salt costs for you and benefits for the environment.*

You can easily reduce high concentration of salt which flow from your house to your septic system or local wastewater treatment plant & ultimately end up in neighboring lakes, streams, rivers & groundwater. The cumulative effects of each homeowner's excess use of salt & resulting brine discharge can have toxic effects for aquatic plants & animals.

### Why is Water Softener Salt a Problem?

Based on estimates from the Salt Institute of America, in 1994 Americans spent approximately \$240 million to purchase 2.6 million tons of salt for use in water softeners.

The primary salt utilized in home water softeners is sodium chloride (NaCl), a natural occurring & commonly used substance. NaCl normally breaks down into sodium & chloride. These elements are discharged into septic systems or local wastewater treatment plants via sanitary sewers. It passes through these systems & is discharged to groundwater or surface water, where the chloride may impact freshwater organisms & plants by altering reproduction rates, increasing species mortality & changing the characteristics of the entire local ecosystem. In addition, as chloride filters down to the water table, it can stress plant respiration & change the desirability of our drinking water.

### How Does a Water Softener Work?

In many Wisconsin communities, people use water softeners to remove minerals from their water that cause hardness. An ion exchange process is the traditional method of removing hardness from water. Hard water passes through a column of sodium charged resin, where hard water ions such as calcium & magnesium are removed from the water by exchanging places with the resin bound sodium ions. The water is then said to be softened.

The resin is "exhausted" when it has given up all or most of its available sodium ions. The resin is then "recharged" with sodium ions during a process known as regeneration. During this process, the resin is washed with a concentrated brine solution (most often NaCl) that reverses the hardness removal process. The total regeneration cycle includes backwash, brine regeneration & final rinse. Of the three steps in the cycle, brine regeneration is the part over which you, the homeowner, have the most control.

### What Can I Do To Reduce My Salt Usage?

Soften only the water that needs to be softened. If you are building a new house, remodeling bathrooms or kitchens, replacing old plumbing or installing a new water softener, consider where your water needs to be softened. Work with your plumber to connect your water softener to only those areas that need softened water.

Places to "feed" softened water are: hot water heater, laundry facilities, dishwashers, toilets (consider low flush models) & showers.

Places to bypass using the water softener include: outside water spigots for yard use and cold tap drinking water lines.

By softening more water than what is really needed, you increase the cost of operating your softener (in terms of increased payments for salt and energy), and ultimately, more salt will enter the environment as a result of increased softener regenerations.

### Use Minimum Salt Dosage Needed for Regeneration

Water Softener regeneration is most efficient at the beginning of the brining cycle. The higher the salt dosage in the cycle, the lower the regeneration efficiency. By setting your water softener to regenerate more frequently & using less salt for each regeneration, you may be able to increase your softener regeneration efficiency, which could result in significant salt savings for you.

Consult with a qualified water softener representative for details on how to adjust your water softener to minimize salt usage while retaining enough softened water for normal household use.

### Switch from a Timer to a Demand Initiated Regeneration Control

Many water softeners regenerate based on a timer typically set to regenerate once every 2 or 3 days, depending on expected water usage and water hardness. By measuring actual demand on the water softener "demand initiates regeneration" or DIR controls are much more efficient in the regeneration process. These controls use either a flow meter or a hardness sensor to determine when to begin the cycle. The "payback" period for adding a DIR control to your water softener from reduced salt usage can be as little as 3 years.

Check with your local qualified water softening representative to see what is appropriate for your particular needs. Even if a newer, more efficient water softener is not in your immediate future, you can still optimize the efficiency of your home unit, resulting in savings for you and the environment. To reduce or eliminate NaCl pollution, our best alternative is preventing the pollution at the source of its generation before it creates a more serious environmental problem. Please do your part if you can.

**An environmental message brought to you by Cuba City Wastewater Treatment Plant  
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