

CHLORIDE FROM HOME WATER SOFTENERS

Chloride levels in many surface waters are increasing and pose an emerging environmental concern, since elevated chloride levels are harmful to aquatic life. Minnesota has 50 lakes, rivers, and streams with chloride water quality impairments, and chloride levels in groundwater are also increasing, particularly in urban areas.

A major source of chloride is water softening. Most Minnesota homes have moderately hard to very hard water, and many use water softeners. Water softeners remove hardness which causes scale build-up in pipes, appliances and water fixtures, and deposits on glassware.



Hard water scale deposits in hot water heater



Ion-exchange water softeners use salt, usually sodium chloride, for recharging. In cities, the salty recharge water (brine) drains to the sanitary sewer where it travels to a wastewater treatment plant (WWTP). Unfortunately, it isn't feasible for most WWTPs to remove chloride, which is dissolved in water. In areas served by septic systems the brine often discharges to the septic system, although this is not a recommended practice as large amounts of sodium chloride can be detrimental to the system.

Is your water hard?

Hardness	Grains per gallon (gpg) calcium carbonate
Soft	0 - 3.5
Moderately Hard	3.5 - 7
Hard	7 -10.5
Very Hard	>10.5

WHAT CAN I DO?

Determine if you need a softener

First, consider why you want or need soft water, and if you can get by without it.
Hardness less than 5 - 7 grains per gallon (gpg) may be acceptable to many homeowners. If your drinking water is from a river, it is naturally softer and you probably don't need a softener.



If you have publicly supplied water, you can find your water hardness from the water utility or city. Some cities soften the water at the drinking water plant. Have your water tested by a professional or buy a kit and test it yourself.

1 teaspoon of salt pollutes 5 gallons of water!





Chloride is impacting our lakes, streams and groundwater.

Consider these practices to reduce salt use and discharge from water softeners.

Consider upgrading your softener

• Replace a timer regenerated softener with a demand-initiated softener

Make sure your softener is sized correctly

• Softeners that are too small or too large for household water use are less efficient

Soften only as necessary

- Soften only indoor, hot water
- Soften specific appliances, such as water heaters

Conserve water

 Practice water conservation to reduce softener regeneration and salt use (e.g. using low flush toilets, using high efficiency or front-loading washing machines, taking shorter showers, etc.)

Regularly maintain your softener

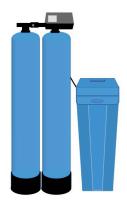
- Review softener manual and check settings
- Have the system optimized by a professional

Remove high iron from well water

- High iron can clog the resin, so use a test kit or consult a professional to measure iron levels
- If iron levels are >3 ppm, consider installing an iron filter to increase efficiency and water softener life, although discharge should be diverted from septic systems

Remove high chlorine from city water

- Find out the chlorine level from your public water supply, since high chlorine can damage the resin
- If chlorine is over 1 ppm, consider installing a chlorine filter to increase efficiency and water softener life



High efficiency features that can reduce salt use:

- Efficiency rating of 4000 grains/lb salt or higher
- Upflow or counter-current regeneration
- Hardness sensors and water meters
- Variable reserve
- Regeneration with softened water
- Twin tanks

Salt-less water conditioning

- Salt-less systems are available-most don't remove water hardness, but may prevent scale build-up on fixtures and appliances
- Some are not well proven, so carefully examine product claims before purchasing

For more information on chloride and reduction strategies, visit:

www.pca.state.mn.us/water/chloride-salts

www.wrc.umn.edu/watersoftening
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