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Water Quality Answers

Are there harmful effects of water softener discharges on household septic tanks?

It is not true that water softener regeneration discharges pose a problem to septic systems or to the leach field. Studies have shown that water softener regeneration wastes not only do not interfere with the septic tank system drain field soil percolation, but, actually could, because of the polyvalent water hardness cations in the regeneration discharges, improve soil percolation particularly in fine-textured soils. WQA has research reports by the University of Wisconsin and the National Sanitation Foundation on septic tanks and water softeners. This research was completed in the late 1970s. It was about that time that numerous regulatory agencies were contemplating restriction on the discharge of water softener wastes to private sewage disposal systems. More recently the U.S. Environmental Protection Agency reviewed this research report, and an expert in on-site waste treatment wrote October 1993 that he "does not believe that the conclusions of the earlier study would change since the chemistry and physics of soils have not." He also goes on to say that he knows this work to remain "scientifically excellent." These studies conclusively show that water softener waste effluents cause no problems for septic tanks. The allowance of water treatment system discharges to hundreds of thousands of septic tank systems is practically universal now. It has not caused damage or hazards; but it has provided convenience and economic savings to many homeowners. This conclusion is supported by the Ten States' "Recommended Standards for Individual Sewage Systems" The states have concluded that even in Montmorillinite clay soils, "the disposal of brine wastes from water softening equipment does not have a significant effect upon the permeability of soils suitable for soil absorption systems."

The addition of sodium to a septic system by use of soft water actually has beneficial effects on the digestion of wastes by bacteria. The volume of wastes from water softeners (about 50 gallons per regeneration) are added to the septic tank slowly and are not of sufficient volume to cause any deleterious hydraulic load problems. In fact, they are lower in volume and rate of addition than wastes from automatic washers. And

the calcium and magnesium in softener regeneration wastes contribute to good air and water movement (improved soil percolation) through the septic system drainage field. The University of Wisconsin and the National Sanitation Foundation reports clearly indicate that when the sodium content from the softener regeneration cycle is discharged into the soil via a septic system along with other salts such as calcium, magnesium, and iron the result is an improvement in the soil's percolation rather than a detriment. The enclosed copy of a letter from Dr. Fred P. Miller, Professor of Soil Science, Department of Agronomy, University of Maryland, in which he evaluates this study clearly indicates this same conclusion. I specifically direct your attention to Dr. Miller's closing statements. Dr. Miller points out that when the septic system is receiving soft water only, containing a very low mineral content, and not receiving the mineral salts from the backwash cycle, this condition "might result in swelling and dispersion of clays and lowered hydraulic conductivity in the absorption field."

There are other advantages that are directly related to the use of ion exchange softened water when the hardness minerals calcium and magnesium are removed by softening. The homeowner uses less soap -- studies have indicated as much as 50% to 75% less. There is also less biodegradable products discharged into the system which relieves the loading on the system. It is a known fact that many homeowners do not maintain a septic system properly; not pumping the system at proper intervals allows detergent solids, as well as other solids, to be carried over into the drainage area causing clogging. Also, by having soft water or stain-free water available, the homeowner's fabrics are cleaner, and the amount of water used can be reduced. This reduces the loading on the septic system a great deal.

Many people may be under the impression that water conditioning equipment regenerates quite frequently and puts a high loading of sodium salts into the waste water. This, of course, is not true; the average family of four people would require a softener regeneration approximately two or three times a week.

The water quality improvement industry has earnestly sought to sort out the factual information on softener effluent. The septic tank study clearly indicates that there are no adverse effects when water conditioning effluent is discharged into properly installed private septic systems. There are a few additional reports that also explain further evidence of the hardness ions in a softener's regeneration wastes causing less clogging and maintaining higher permeability than the regular septic tank effluent.

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