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WQA WHITE PAPER ON WATER SOFTENER BRINE DISPOSAL TO SEPTIC SYSTEMS

INTRODUCTION

Many homeowners rely on septic systems for onsite wastewater disposal. Those same homeowners often rely on cation-exchange water softeners to improve the quality of their water. WQA supports the rights of these homeowners to utilize water softeners and other treatment devices for improving the quality of their water, and the rights of these homeowners to utilize septic systems for onsite wastewater disposal. By following the guidelines jointly developed and published by the National Onsite Wastewater Recycling Association (NOWRA) and WQA, the waste water discharge from regeneration of household water softeners can be safely and economically discharged to onsite septic systems with no deleterious effect on the performance of the septic system or the environment. Research has shown that under some conditions the waste water discharge from regeneration of household water softeners can even improve septic system performance.

Codes or regulations which restrict a homeowner's ability to send waste water discharge from regeneration of a water softener to their septic system create unnecessary burden and expense for homeowners who rely on septic systems for onsite waste water disposal. Such codes are not based on science and can restrict a homeowner's access to these proven technologies which provide access to safe drinking water and onsite waste water disposal.

SUMMARY

An estimated 20 percent (26.1 million) of homes in the U.S. are served by septic systems, and many of these homes also use water softeners (EPA, 2008). Due to the widespread use of water softeners with septic systems, it is important to understand the impact that water softener discharge has on septic tank system performance. Several research studies have examined this issue and are summarized below.

The Water Quality Research Council (WQRC), supported two studies in the late 1970s to investigate the performance of septic systems with and without water softener brine; one by NSF International Inc. (NSF), and the other by the University of Wisconsin in Madison. The NSF study used aerobic wastewater treatment units to study the effects water softener brine might have on treatment processes. They found that the wastewater brine demonstrated no adverse effects on home aerobic wastewater treatment units, even when stressed at a higher than normal use rate for the softener (10 people in a household versus 5). They found no difference in performance between days the aerobic treatment unit received brine from the softener and days it did not (NSF, 1978).

The study at the University of Wisconsin Madison investigated if water softener brine impacts the ability of a septic system drain field to absorb wastewater. Researchers found that the water softener regeneration brine did not reduce the percolation rate of water in the absorption field of a normally operating septic system and may improve soil percolation in fine textured soils due to calcium and magnesium which help maintain soil

permeability. They also found the presence of salt from water softener brine had no negative impact on the bacteria in a septic tank (Corey & Tyler, 1978).

In 2013, the Water Quality Research Foundation (WQRF) funded another study on the use of softeners in conjunction with septic systems. Virginia Polytechnic Institute and State University performed the research. The Steering Committee for the project included members from the National Onsite Wastewater Recycling Association (NOWRA), the State Onsite Regulators Association (SORA), and NSF. The researchers found that the use of efficiently operated water softeners (3,000-4,000 grains of hardness removed per pound of salt) improved septic tank performance. The addition of regeneration wastes (calcium, magnesium, sodium) from an efficiently operated water softener to a septic system were found to help in the settling of solids and produced a higher quality effluent from the septic tank. However, the use of very inefficient home softeners (<1000 grains of hardness removed per gallon) was shown to be detrimental to solids settling and produced a lower quality effluent due to large concentrations of excess sodium. The level of impact depended on the level of hardness in the water, whether the regeneration waste was discharged to the septic tank, and the amount of excess sodium present in regeneration wastes (Novak & Hogan, 2013).

Taking into account the results of the research summarized above as well as industry experience, WQA and NOWRA put together a guidance document of best practices for the use of water softeners and septic systems. This document can help homeowners ensure they will not experience issues between their water softeners and septic systems (NOWRA & WQA, 2013).

A number of state and local regulatory agencies have from time to time proposed restrictions which would ban or restrict discharges from water softeners to private sewage systems, but there is no scientific evidence to support such regulatory restrictions.

CONCLUSION

The research indicates that when water softeners are operated properly and efficiently, they have no negative impact on septic systems, and may improve the performance. When a water softener is set very inefficiently, or regeneration wastes are diverted, there could be negative consequences for a septic system. Homeowners should follow the guidance published by WQA and NOWRA on how to use water softeners in conjunction with septic systems.

Regulators and policy makers should oppose codes or regulations which restrict a homeowner’s ability to send waste water discharge from regeneration of a water softener to their septic system. Such codes create unnecessary burden and expense for homeowners who rely on septic systems for onsite waste water disposal and have no scientific basis.

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