Virginia Polytechnic Institute and State University Study:

“**Changes in Septic Tank Effluent Due to Water Softener Use**”

**What was the purpose of this study?**

For many years, policymakers and professionals have speculated about what kind of effect customary water softeners might have on septic systems. We believed that more independent, technical data could be generated to ensure that science drives this debate.

In 2012, the Water Quality Research Foundation commissioned Virginia Polytechnic Institute and State University to conduct independent and scientific testing on this issue. The result is an official report, “Changes in Septic Tank Effluent Due to Water Softener Use.” Nearly $100,000 was invested for this 18-month study.

**What effect on septic systems did the study find?**

After rigorously analyzing data from their study experiments, researchers found that while the effect of softeners on septic systems will depend on source water quality and usage, certain general conclusions can be made.

According to the authors of the study: “The data indicate that the use of efficiently operated water softeners improves septic tank performance, while the use of very inefficient home softeners may have a negative effect on solids discharge to the drain field, and the level of impact will depend on the level of hardness in the water, whether the regeneration waste is discharged to the septic tank, and the amount of excess sodium present in regeneration wastes.”

These results are particularly revealing because they suggest that well operated softeners at efficiency ratings of 3000 to 4000 grains of hardness (or more) removed per pound of salt used will not harm – and could even aid – septic systems. As it happens, properly set efficiency rated DIR units (currently, the most commonly installed device type) fit the need of most rural households, providing softened water inside the house using less sodium chloride and water for recharging the unit, and leading to an efficiently operated septic tank and discharge field.

**As a regulator, what are the implications of this study?**

Armed with these results, policymakers can lay out sensible approaches to educate buyers and users of softeners with septic systems of the need for efficient water softening as much as possible, and to encourage the use of efficient devices in these situations. The conclusions of this study may also offer helpful guidance as rules and regulations are drafted and revised in states and communities, particularly concerning housing and plumbing related guidelines.

**How can I find out more?**

For a “toolkit” summary of the report and more information, contact the Water Quality Association at wqa.org or 630 505 0160.