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PRESS RELEASE

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Independent study: Softeners among 'very best' household energy savers

Devices offer green benefits to water heaters, appliances, showerheads

LISLE, Illinois -- Water softeners can save significant amounts of money and energy in the home, a major new study by the independent Battelle Institute revealed.

Softeners help preserve the efficiency of water heaters and major appliances and keep showers and faucets unclogged, the report found. The study was commissioned by the Water Quality Research Foundation (WQRF) in 2009. Battelle Memorial Institute is a renowned independent testing and research facility dedicated to applied science and technology development.

Among some of the key findings of the study:

Gas water heaters:

Gas storage tank household water heaters operated on softened water maintained the original factory efficiency rating over a 15-year lifetime. On the other hand, hard water can lead to as much as a 48% loss of efficiency in water heaters.

Each five grains per gallon of water hardness causes a 4% loss in efficiency and 4% increase in cost for gas storage tank water heaters when using 50 gallons of hot water per day. (On 30 gpg hard water, that's 24% less efficient than with softened water.)

Each five grains per gallon of hardness causes an 8% loss in efficiency and 8% increase in cost when using 100 gallons of hot water per day in a gas storage tank water heater. (On 30 gpg hard water, that's 48% less efficient than with softened water.)

Electric water heaters:

Up to 30 pounds of calcium carbonate rocklike scale can accumulate in these heaters over time, according to the study. The life of the heating element will be shortened due to scale buildup because of increased operating temperature of the heating element.

Also each five gpg of water hardness causes 0.4 pounds of scale accumulation each year in electric storage tank household water heaters. Such scale adversely affects the water heater's performance. Battelle says in the electric storage water heaters operating on unsoftened water "the life of the heating element can be expected to shorten due to scale buildup increasing the operating temperature of the element."

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Tankless heaters:

Indoor instantaneous gas water heaters (tankless heaters) operated on softened water maintained the original factory efficiency rating over a 15-year lifetime.

The study found that tankless water heaters completely failed to function because of scale plugging in the downstream plumbing after only 1.6 years of equivalent hot water use on 26 gpg hard water. Softened water saves 34% of costs compared to operating on 20 gpg and saves 47% compared to operation on 30 gpg hard water.

Showerheads and faucets:

Showerheads on soft water maintained a brilliant luster and full flow. Faucets on softened water performed well throughout the study; nearly as well as the day they were installed. Showerheads on hard water lost 75% of the flow rate in less than 18 months. Faucets on hard water could not maintain the specified 1.25 gallons per minute flow rate because of scale collection of the strainers. The strainers on the faucets using unsoftened water were almost completely plugged after 19 equivalent days of testing.

Appliances:

In the study, dishwashers and washing machines were operated for 30 days and 240 completed wash cycles on soft and hard water sources. The units using soft water were almost completely free of any water scale buildup. As the report states, they appeared as if they could be cleaned up to look like new with just a quick wipe down. The appearance of the inside of units using hard water showed the need for deliming and cleaning due to the buildup of scale and deposits.

WQA is a not-for-profit association that provides public information about water treatment issues and also trains and certifies professionals to better serve consumers. WQA has more than 2,500 members internationally.