

Question of the Month

ADVICE FOR SMALL SYSTEMS

Tap Water vs. Bottled Water: What's the Difference?

BY PAT KLINE

QUESTION: Though the quality of water coming from my system meets or exceeds regulations, a lot of my customers drink bottled water. How can I convince my customers that tap water is safe?

ANSWER: “My water tastes and smells funny!” Many customer complaints involve concerns about taste and odor, which are some of the most difficult problems for a water system to address. One reason for the difficulty is that taste and odor evaluations are subjective. For people who are sensitive to minerals or other components of your water, bottled water seems like the logical choice. Because the water comes in a labeled bottle, it must be cleaner and healthier than water that's been traveling through underground pipes. Right?

Dissatisfaction with water taste or smell isn't the only reason people drink bottled water. Successful marketing has convinced some consumers that bottled water is pure and safe and is a healthy alternative to other beverages. Have you heard of Bling H₂O? The frosted, corked bottles are emblazoned with hand-applied Swarovski crystals. So bottled water can also be a status symbol.

HOW MUCH ARE CUSTOMERS PAYING?

In this economy, many people are trying to save as much money as possible on necessities and are cutting back on luxury items. You may be able to change some of your customers' bottled water habits by comparing the per-gal cost of bottled water vs. the cost of tap water. For example, the cost of Bling H₂O converts to \$200/gal for the 750-mL bottle and \$260/gal for the 350-mL bottle.

Okay, maybe this example is extreme. Let's look at more reasonable examples of bottled water costs. Prices for unflavored bottled water at a discount store averaged \$1.48/gal, ranging from \$1.22/gal to \$1.89/gal. Unflavored bottled

water prices at a membership store averaged \$1.09/gal, ranging from \$0.97/gal to \$1.23/gal. The membership store also sold imported bottled water that averaged \$4.84/gal.

And your utility is charging *how much* for providing water directly to customers' taps? Say your customers receive an average water bill of around \$25/mo. For a family of four, average water usage is about 100 gpd/person, 400 gpd for 30 days, or 12,000 gal/mo per family. Depending on the amount of water conservation efforts in your area, however, actual water usage may be about 75–80 gpd/person. If we assume usage of 100 gpd/person, the cost of tap water is \$0.01 for 5 gal or \$0.002/gal. You can personalize this amount by using the average bottled water price in your area, your utility's average water billing, and your customers' average usage. Illustrating the cost difference should be a real eye-opener for customers.

COST INCLUDES MORE THAN WATER

How many of us pride ourselves in environmental stewardship? We recycle beer cans, turn off lights when we leave a room, use mass transportation, and conserve water—all efforts to help preserve our planet for future generations. By “going green,” we're part of the solution, instead of contributing to the problem. How does purchasing bottled water fit this philosophy?

Bottled water comes in glass or plastic containers. Weight, transportation costs, and consumer preference generally mean that US water is bottled in plastic, usually polyethylene terephthalate (PET) for bottles and polypropylene for caps

and connecting neck rings, which are derived from crude oil. A 2006 *National Geographic* article reported that 1.5 million barrels of oil are used annually to manufacture plastic for bottled water sold in the United States. That amount doesn't include associated fuel costs for transportation and stocking or the cost of cleaning up air pollution resulting from fuel exhaust.

Glass and plastic can be recycled, saving raw material and energy costs, to create new bottles and fabrics for clothing and carpets. In addition, associated wrapping film, cardboard boxes, pallets, and shipping crates can be recycled. Do people actually recycle? The National Association for PET Container Resources reported a US recycle rate of only 23.5 percent last year. So most empty bottles ended up in landfills or as litter.

IS BOTTLED WATER SAFER?

Let's take a look at the water in the bottle. The US Food and Drug Administration classifies bottled water by the location in which the water originates.

- Artesian well water comes from a well tapping a confined aquifer. The theory behind using this water is that confined aquifers experience less contamination from the land surface because rock and clay confine the layers and provide pressure to the confined aquifer.
- Mineral water is groundwater that contains at least 250 mg/L of total dissolved solids (TDS), which consist of minerals and trace elements. The TDS must be original to the source, not added after the groundwater is pumped.
- Spring water is collected directly from a spring or from a borehole tapping the formation that feeds a spring. If a borehole is used, the collected water

must have the same constituents as those of the water in the spring itself.

- Well water is groundwater from a confined or unconfined aquifer.
- Purified water comes from municipal sources—that's right, tap water—which goes through additional treatment, such as distillation, reverse osmosis, microfiltration (also known as absolute one-micron filtration), or ozonation.

According to the US Environmental Protection Agency, about 80 percent of the 170,000 or so public water systems use groundwater, generally in rural areas where population density is low, but 66 percent of the US population uses surface water in urban areas where population density is high. Ten to 20 percent of the US population gets its water from private wells, which aren't regulated by USEPA.

The allowable level of various constituents in drinking water is regulated by USEPA through enforceable maximum contaminant level standards based on constituent occurrence and health effects. The USFDA requires bottlers to list added ingredients, such as fluoride, flavoring, or minerals. Naturally occurring minerals can't exceed maximum levels permitted by USFDA or state regulations.

Even if your tap water meets USEPA standards, it won't be acceptable to everyone. Ask your customers for feedback on tap water quality. Taste and odor may indicate a water quality problem that can be corrected or mitigated at the plant, in the distribution system, or at the point of use.

Richard Feynman, a Nobel-winning physicist, said, "For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled." Despite great public relations efforts, bottled water isn't a sustainable technology, and it's up to bottled water drinkers to stop fooling themselves. ♪