Water Purity

BY DEL WILLIAMS

Is your water as clean as you think?

Most people will not consume drinking water that outwardly looks, smells, or tastes bad. We know instinctively that contaminated water can make us sick.

However, modern water treatment is designed to identify and remove only a limited number of contaminants. Evidence continues to prove that we are getting more than we bargained for in the water we drink, cook, and wash with. Over the last decade, a growing number look to go beyond "legally safe" municipal water standards to protect themselves, their families, and pets.

Legally safe water does not mean pure. The Environmental Protection Agency (EPA) sets maximum allowable levels for only 91 out of thousands of contaminants in the Safe Drinking Water Act. At the same time, consumers are subjected to constant media reports about the latest harmful chemical toxins, drugs, and carcinogens being found regularly through tests of our legally safe municipal water.

In response, many consumers turn to bottled water or inexpensive filtration units such as water pitchers and units that clip to water faucets. While these are a step in the right direction, they are not capable of eliminating many of the chemicals and water-borne diseases in question.

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Although more advanced systems can provide completely clean water, they cost more than partial filtration systems. When the cost is figured over the life of the filter, however, the overall cost is still mere pennies per gallon.

Contaminants in Water

A *New York Times* article in December of 2009 stated, "Scientific research indicates that as many as 19 million Americans may become ill each year due to just the parasites, viruses, and bacteria in drinking water." It also noted that cases of "certain types of cancer—such as breast and prostate cancer—have risen over the past 30 years, and research indicates they are likely tied to pollutants like those found in drinking water." The article maintains that since 2004, "water provided to more than 49 million people has contained illegal concentrations of chemicals like arsenic or radioactive substances like uranium, as well as dangerous bacteria often found in sewage."

Darlene Kvist, a licensed nutritionist, co-host of the weekly radio show Dishing Up Nutrition, and co-founder of the St. Paul, Minnesota-based nutritional consulting firm, Nutritional Weight & Wellness, says, "Water, the universal solvent, tends to dissolve anything it touches over time, so it can end up with a whole range of contaminants you don't want in it."

"Everyone should be concerned about how the water they drink or cook with will affect their health," adds Kvist. "They should seek out the cleanest, best-tasting, contaminant-free water they can get. That's particularly true for those with chronic illnesses, who may be more sensitive to water-borne contaminants."

Contaminants can indirectly enter the water supply or even seep into underground aquifers, which is the source of much municipal tap water. These contaminants come from many sources: industrial waste, agricultural pesticides, landfill seepage, underground fuel tanks, and septic-system leakage.

Industry legally sends billions of pounds of contaminants into air and water. Farm runoff includes a multitude of fertilizers, insecticides, herbicides, fungicides, rodenticides, and animal wastes.

Emerging contaminants include traces of prescription drugs from antidepressants to painkillers, that when not fully metabolized by the user's body, are flushed down the toilet and into the water supply. Drinking water for at least 41 million people living in 24 major metropolitan areas tested positive for trace amounts of pharmaceuticals, according to a five-month Associated Press investigation. Yet, the federal government does not require testing for these emerging contaminants in drinking water.

While municipal facilities typically treat water with chlorine, there is evidence that this can make some pharmaceuticals more toxic. Existing water treatment plants may be unable to comply with new reduced maximum contaminant level regulations. In fact, there's growing global concern about decaying water infrastructure that's up to 100 years old in some locations, with miles of aging, asbestos-lined water mains, cadmium-nickel galvanized pipe, lead pipe leaching contaminants.

"What's considered legally safe is a moving standard that's getting more strict over time, due to ongoing lab and government research," says Alfred Lipshultz, President, CEO, and Co-Founder of Aquathin Corporation. "The water we were told 20 and 30 years ago was 'legally safe' to drink is not considered safe by today's standards and likely future standards."

In 1974, the Safe Drinking Water Act first regulated 22 contaminants. Today, there are 91 regulated contaminants under the Clean Water Act. If tap water contains less than the maximum contaminant levels for each of these contaminants, the water is legally safe. However, the EPA is looking at 10,000 other unregulated contaminants known to be in tap water and is considering regulating 104 more.

"When thousands of contaminants in drinking water are not tested for, it may be considered legally safe, but it is not totally safe," says Dr. Jeff Brist, a certified clinical nutritionist, board certified naturopathic physician, and licensed doctor of chiropractic with a practice in Champlin, Minnesota. "Toxins will accumulate in the body if the liver cannot rid the body of them, particularly in fat tissue which is plentiful in the brain and nerves."

Bottled Water

Bottled water is a popular solution to drinking tap water. However, it might not be much better. Up to 40 percent of bottled water is actually drawn from municipal tap water. Some tested bottled water even contained contaminants such as synthetic chemicals, bacteria, and arsenic. Plastic bottles are also horrible for the environment.

"Many plastic bottles used for drinking water are made with bisphenol-a (BPA), a toxic chemical that could leach into the water, particularly in hot conditions," says Dr. Brist. BPA has been shown to disrupt the hormonal system of animals. As indicated in animal tests, even small amounts of the chemical could cause changes in the body.

Even if bottled water is considered adequately

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safe, it is seldom used for washing fruits or vegetables, cooking rice or pasta, or making ice. Using tap water for any of these activities can quickly introduce contaminants back into a family's diet even if they drink only bottled water.

Filtration Systems

Like many consumer-driven markets, the water-treatment industry has responded to demand with a wide variety of options. Consumers have been offered clustered water, ionized water, catalytic, aura, and spin-magnetic drinking water, all of which make claims for curing everything from diabetes and cancer to impotency.

A quality home water-filtration system, however, can produce clean, healthy water based on scientifically proven principles at costs much less than bottled water. In fact, state and municipal water plants in recent years have recommended home filtration units when the plants cannot address certain contaminants or when well water is the only option.

Yet ordinary water filters have significant limitations. Simple pitcher-type filters typically use carbon and ceramic to make tap water taste better. While common carbon filters are effective against organic contaminants such as pesticides, herbicides, and chemical solvents, they are ineffective against microorganisms and inorganic contaminants. They cannot remove salts, heavy metals, and only reduce a few of the pollutants in the spectrum of pesticides and industrial wastes.

Adding a reverse osmosis (RO) filter can remove at least 70 percent of impurities by membrane separation. Yet while ordinary RO systems are somewhat effective against organic and inorganic contaminants, they fail to treat viral and bacterial microorganisms.

However, a filtering process called reverse osmosis with deionization (RODI) combines the best of multiple purification systems and is capable of removing the inorganic and organic contaminants. This multi-barrier system integrates deionization to carbon and RO filtration to purge the microorganisms, lead, asbestos, nitrates, heavy metals, and volatile organic chemicals that each system, alone, fails to eradicate.

"With purified drinking water using RODI… you can essentially eliminate bringing waterborne contaminants into the body, which can help the body thrive, not just survive," says Dr. Brist.

For families unsure about the quality of their home drinking water, Kvist offers some advice. "Have the water tested by a water purification expert," he says. "After all, prevention is the best medicine."