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Aug. 23, 2005 - When the water-purifying system broke in Becky Wright's office recently, "life stopped for a lot of people," she says. The thought of drinking water straight from the tap horrified the 29-year-old editor from Ho-Ho-Kus, N.J., who's drunk only filtered or bottled water for the last 10 years. A self-described "water connoisseur," Wright stopped drinking from the tap in college after hearing about nasty impurities that might lead to health problems. And, like millions of Americans, she's still reluctant to sip straight from the sink.

Despite continued improvements in the nation's water system, there's a lingering perception among some members of the public—aided in part by the plethora of ad campaigns for bottled water brands—that safe drinking water must be bought off a shelf or filtered. Sales of bottled water have tripled in the last decade, despite the exorbitant cost of some brands (especially compared to tap, which is virtually free).

But is there a problem with tap water in the United States? Not according to the Environmental Protection Agency (EPA), which reports that more than 90 percent of water systems in the country exceed standards. (The nonprofit Natural Resources Defense Council finds that a few major cities, including Atlanta, San Francisco and Albuquerque, N.M., fall short.) "[In general] it is definitely safe for you to turn on the tap," says Jack Hoffbuhr, executive director of the non-profit American Water Works Association, which represents 57,000 water industry workers from treatment plant operators to regulators. Compared to other countries, America has one of the best water systems in the world, he says. Water utilities monitor for more than 103 contaminants and must comply with the EPA's standards on 80 of the most harmful, including disease-causing microbes and synthetic industrial material. While some traces of contaminants may remain, as long as they occur within the limits of EPA standards, they pose no significant health threats, according to the NRDC.

Still, Hoffbuhr acknowledges that public fears about water safety abound. And while most of the water flowing from U.S. taps is safe, Richard Maas, a water quality expert and co-director of the Environmental Quality Institute at the University of North Carolina-Asheville, says there are five categories of harmful contaminants that homeowners should look out for:

Lead: The EPA estimates that 20 percent of lead exposure comes from drinking water. The presence of the metallic element, according to Maas, dwarves all other drinking water problems. Maas estimates 10 to 15 percent of people have dangerous amounts of lead in their drinking water that comes not from the water being pumped in, but from the lead pipes, lead plumbing, solder or brass faucets in the home. Levels over 15 parts per billion (15 particles of lead in a billion particles of water) are considered high risk and can be devastating, especially in children and pregnant women. Exposure to even tiny amounts of the substance can cause neurological damage, including ADD and reading disorders (unlike most contaminants, which take years to manifest into health problems, lead can have immediate effects). But Maas says filters that claim to remove lead almost always do. Lead can also be flushed out by turning on the faucet for a minute in the morning before drinking, he adds. If homeowners suspect a lead problem, Maas says they can also notify their water utility to change the chemistry of the water to make it less corrosive.

Arsenic: While lead is relatively easy to eliminate from water, arsenic removal is tougher and more expensive. The element enters the water-supply system from natural deposits underground or via industrial or agricultural pollution. Even at the levels allowed by the EPA, longtime consumption of arsenic-tinged water has been shown to pose a higher cancer risk than any other contaminant the EPA allows in water. Daily consumption of low levels increases risk for bladder, lung and skin cancer, and large amounts can be extremely poisonous, according to a 1999 report by the National Research Council. High levels of arsenic are more often found in the Southwest and Northwest parts of the country, according to the Centers for Disease Control and Prevention (CDC), but anyone who taps into ground water sources, especially private or public wells in places such as trailer parks, could be at risk. Maas recommends that at-risk consumers purchase a filter certified to remove arsenic by NSF International, an independent organization that sets standards for health and safety products worldwide.

Disinfection byproducts: A surprising form of contamination is from the chlorine used to kill bacteria in water. The disinfectant thwarts sometimes deadly diseases like cholera and dysentery. But when it combines with organic material like leaves or treated sewage, it forms its own carcinogen that, when consumed in large amounts over long periods, can pose an increased risk of cancer. (It is so far unknown if smaller amounts do any

damage.) Balancing disinfections and its health risks presents a difficult challenge to water suppliers. Currently 80 percent of Americans drink chlorinated water; but, according to the EPA, it is increasingly being replaced by chloramines, which are less likely to produce harmful byproducts. To reduce risk at no cost, Maas recommends setting a pitcher of water on the counter for five to six hours so the byproducts can evaporate. Or buy an activated charcoal filter.

Microbial pathogens: While chlorine can kill most bacteria, it doesn't always wipe out all viruses, such as the flu, or parasites that may be present in tap water. The CDC estimates the parasite cryptosporidium is one of the most common causes of water-borne diseases. In 1993, cryptosporidium, which is transmitted by animal or human waste, contaminated the drinking water in Milwaukee, killing 100 people and making 400,000 more sick. Usually, healthy immune systems can battle the contaminant, but weaker immune systems can be especially vulnerable to the parasite, which nests in the intestines. Fortunately, the Milwaukee outbreak seems to be the exception. Overall, Maas says, municipalities do a good job getting rid of parasites and let customers know when water becomes contaminated. And the CDC says most filters catch cryptosporidium (reverse osmosis filters work best). Still, if a warning is administered, they suggest boiling the water before drinking. People with immune deficiencies may want to take extra precautions to ensure they aren't susceptible to waterborne illness. The EPA and CDC say boiling water is the most effective way of killing cryptosporidium, but also suggest using a filter or drinking bottled water derived from protected well and spring sources (though they stress there is no guarantee bottled water is clean of cryptosporidium).

Industrial and agricultural pollutants: Synthetic chemicals from plants and pesticides can find their way down stream after being dumped by factories or run-off from farms. But unless a town is immediately down river from a major industrial plant, Maas and others say there is little chance that enough pollutant will make its way to your tap to make you sick.

If you're worried about your water, experts recommend having it tested for contaminants. Testing is "the seatbelt of water quality. Before you do everything else, you want to buckle your seatbelt," says Maas, whose institute offers a low-cost testing kit for arsenic and lead for homeowners who agree to be part of the university's research. (Kits can be requested at www.leadtesting.org.) If you use a public water supplier, you can also request an Annual Water Quality Report (also called a Consumer Confidence Report) that indicates the source of the water supply, the treatments and additives used, and what contaminants remain in the water, if any, according to NSF International. Private well owners can check with their local health department for a list of typical well water contaminants in the area and contacts for laboratories available for testing. The EPA suggests well owners test annually for nitrate and coli form bacteria, and also monitor activities around the well to ensure chemicals—from paint, for example—don't seep into the water source.

Once you know what is coming out of your tap, you'll have a better idea of what you need to remove—if anything. The EPA says most people won't need to treat their water at home. But if you do buy a filter, Maas recommends getting one that is NSF certified and changing it frequently. While most filters can last twice as long as the manufacturer suggests, he says many people still do not change the filter enough.

The bottom line, says Ian Barbour, general manager of Dow Liquid Separations, which manufactures water treatment products: "Safety shouldn't be the driving force behind choosing bottled water over tap water." And when it comes to cost and convenience, nothing beats the tap.