

## Hot Tap Water Quality: Q&A with Emily Fritz of Louisville Water Company

*Steve Hubbs, PE*

*April 19, 2019*

Every day, Americans consume more than [one billion glasses of tap water](#), the majority of which is provided by over 50,000 community water systems. Conventional water treatment transforms raw water into [safe \(finished\) drinking water](#) for pennies per gallon, thanks to widespread treatment, disinfection, and protection of water as it travels to your home. The Louisville Water Company has historically and continues to provide [award-winning, trademarked](#) drinking water to its almost one million customers. As a former treatment operator for Louisville Water, I am proud of our cultural heritage of public health protection that dates back to 1860, and of the employees at Louisville Water who continue with this commitment today.



Most consumption of household water is from the cold-water tap, which reflects source water temperature and can vary widely by time of year and climate. Hot tap water typically passes through a heater and is stored until needed in a large tank at a relatively constant (hot) temperature. From the hot water tank, it flows to the hot tap, and in some larger systems (apartments and large buildings), it may be circulated back to the tank to provide a constant source of heated water throughout the building. To keep a large volume of hot water available at all times, the water that comes out of the hot-water tap may have been heated and stored for hours, days, or even longer (e.g., when you return home from a vacation). Which begs the question: Is hot tap water safe to consume? To answer this and a few related questions, I asked Ms. Emily Fritz, a scientist at Louisville Water and former colleague.

*First, is hot tap water safe to consume?*

It is recommended by public health agencies, including the Centers for Disease Control and Prevention ([CDC](#)) and the U.S. Environmental Protection Agency ([EPA](#)), to drink and cook with water from the cold-water tap. Louisville Water is one of many utilities that communicate this same message. The best way for a customer to ensure they are drinking the highest quality water is to consume only tap water from the cold-water line. Louisville Metro Department of [Public Health & Wellness](#) also shares this message when providing food inspections and training to school and childcare facilities—they advise staff to cook and prepare food using only treated cold water sources.

*What are the safety concerns in general, and should specific groups of people refrain from consuming hot tap water?*

A majority of the concern lies in the fact that hot water dissolves metals and materials more readily than cold water. A primary factor in chemical reactions is temperature; warmer temperatures lead to increased leaching/dissolving. This is a known occurrence with copper lines and plumbing components that contain lead, but there may also be leaching concerns with [other piping and plumbing fixture materials](#). Hot water heaters and boilers that contain many metallic parts may also have, by design, “sacrificial” anodes that can deteriorate over time. For this reason, manufacturers often recommend periodic flushing of the hot water heater, but it is likely that many homeowners do not follow this advice.



*Emily Fritz is a scientist at Louisville Water with 18 years of research and analytical experience, including distribution water quality monitoring.*

From a microbial water quality standpoint, there is the potential for hot water heaters and lines to provide an environment that allows some aquatic organisms to grow and thrive, [including \*Legionella\* bacteria](#). Warmer temperatures and long storage times can deplete chlorine residual levels that protect water from microbial growth and regrowth in pipes in our homes. The [American Society of Sanitary Engineering](#) recommends setting the temperature of home water heaters to 135–140°F to help inhibit bacterial growth. It is important to be aware that increasing temperature settings on a water heater above 120°F can create a [scalding hazard](#). For this reason, such adjustments should be communicated to all residents and accompanied by the proper installation of anti-scald devices. It is not necessary to maintain such high water temperatures at all times, but intermittent increases are effective for maintenance and to minimize scalding potential.

Precautions about drinking water from the hot-water tap are pertinent to us all, but particularly to those most susceptible to microbial infections, metals absorption, and scalding, including infants, the elderly, and those with immunocompromised conditions. **And while it may be quicker to make baby formula from the hot-water tap, this is never a good idea! Baby formula should be made with boiled—and cooled—water from a cold-water tap.**

*What uses of hot tap water are safe?*

Hot tap water in and around the home is ideal for cleaning and contact purposes, whether that's bathing, washing dishes, doing laundry, and so on.

*How about the safety of using new “in-sink instant water heaters”? Are there any special concerns with these types of devices?*

With advances in hot water systems such as “tankless” water heaters, the continuous flow system still does not address the connected plumbing materials that could leach contaminants into the hot-water lines. Although it does largely remove the potential for leaching issues within the metallic holding tank itself, it does not address all quality concerns.

*Any final thoughts on the safety of consuming hot tap water, both from Louisville Water and in general?*

In my opinion, this topic might be better communicated as a *quality* issue rather than a safety issue. There is always a potential for the quality of a home's hot water system to be compromised in some manner, but in most cases, it will be just fine. The key message is to ensure the best quality of hot water at the tap would be to follow all manufacturer recommendations for water systems, and to [quote myself](#), “When consuming or cooking with water, take water from the cold water tap and heat it separately – by boiling, microwaving, or letting your coffee maker do its job.”

Thanks to Emily Fritz for providing this helpful information on hot tap water quality and sharing her perspective, and to the generations of water professionals before us that have advanced the science of drinking water in the interest of protecting public health.

*Steve Hubbs retired from water treatment operations at the Louisville Water Company in 2004. He remains an active volunteer in the drinking water community today.*