

## Q&A

- **U.S. EPA:** For the premise plumbing; what is the lesson learned there? Are the chlorine or monochloramine levels in the home enough to kill the legionella?
  - **Jeffrey Szabo:** It depends on how much legionella is there. The way it would typically grow in a biofilm may always be present at low levels; that might just not be a problem. It also depends on how you operate your home plumbing system. If a lot of water moves through, it might be okay. The problems are when maybe you are on the edge of the water distribution system and there is stagnancy. There is also the problem that once it is in your house, it is the homeowner's responsibility, not the water utility's.
- **Pacific Northwest National Laboratory:** Any future plans in microbacteria?
  - **Jeffrey Szabo:** I do not have a definitive answer there; that might be interesting to microbiology experts.
- **Advancia Corporation:** Regarding the temperature of the water heater, is pushing to 140 causing more issues?
  - **Jeffrey Szabo:** If the temperature of the water itself is not enough to kill legionella outright, and it sits in the pipes and becomes stagnant at room temperature, that might be a problem.
- **Advancia Corporation:** I was wondering about the difference between the 140 that was set to kill a certain ratio of bacteria versus the whole trend; in nursing homes, they try to push you to 120.
  - **Jeffrey Szabo:** The lower you go in temperature, the less it will thermally activate something. There is a balance there; you could turn your water heater up to kill everything, but you then run the risk of scalding.
- **UNC at Chapel Hill:** The PVC had twice as thick of a biofilm?
  - **Jeffrey Szabo:** No, it was less.
  - **UNC at Chapel Hill:** Do you think that had to do with the CT values you found?
  - **Jeffrey Szabo:** Definitely. It is 2 things: (1) when it is thinner, it can penetrate better, and (2) if it is less patchy, there is less domain there. It is a factor, but saying how much of a factor it is difficult.
  - **University of North Carolina at Chapel Hill:** So, you did not look at EPS production?
  - **Jeffrey Szabo:** No, that is not something we can do here.
- **North Carolina Department of Agriculture & Consumer Services:** In homes where there is a long reach between the heater and parts circulating hot water, does that present challenges?
  - **Jeffrey Szabo:** That is how some large buildings run – with a re-circulating hot water system. There is a loop it is drawn out of. If you are recirculating it, and it is at a sufficient temperature to kill legionella, that might be a way to control it. However, if the temperature is not high enough, then it might become an environment where it can grow.