The headline screamed it from CNN and CNN.com earlier this year: “Soda fountains contained fecal bacteria, study found.”

Antibiotic-resistant microbes, E. coli, coliform bacteria (which could indicate possible fecal contamination)—some or all of the above were found in 48% of the 90 fountain samples tested from quick-serve restaurants and convenience stores in the Roanoke, Va., area. (Visit www.cspnet.com/fountainbacteria for details of the study.)

The one thing the study didn’t uncover was a definitive cause of the bacteria, leaving retailers and manufacturers at a bit of a loss.

“My initial reaction would be that somebody had dirty hands and was touching the spigots or the valves,” says Jim Monroe, director of foodservice for Handee Marts Inc., a 7-Eleven licensee based in Gibsonia, Pa. “But they tested for that, and that was not the source. They tested the water [source], and the bacteria wasn’t coming from the water line. Maybe a local bottler had some bad syrup.”

Further testing concluded there was no reason to blame the syrup.

“It’s an awful suspicious thing,” says Monroe, whose stores were not part of the Virginia study. “[A soda fountain] is a self-contained system. … So the bacteria was coming from the syrup line.”

‘NO PUBLIC HEALTH RISK’

Not surprisingly, the study, conducted by Hollins University, a private liberal-arts college in Roanoke, concluded much the same thing.

“What we think is happening is there are communities of bacteria living inside those tubes inside the machine—a bio film, for instance,” says the study, published in the January issue of the International Journal of Food Microbiology. “As the machine gets used, the top layer of the biofilm gets washed off, but when few people are buying soda, the liquid isn’t being flushed and, overnight, they multiply.”

One prime piece of evidence of the cause: More bacteria was found in drinks poured in the morning than those poured later in the day.

“That shows the importance of flushing those [syrup lines] once a day.”

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**A Maintenance Timetable**

**DAILY**
- Remove cup rest and wash with warm, soapy water.
- Wipe down the exterior unit using warm, soapy water, rinse thoroughly and wipe dry.
- Remove and clean valve nozzles with warm, soapy water, then reinstall.
- Pour warm, soapy water down drains to keep them running.
- Check temperature, smell and taste of product.
- Check water pressure.
- Check carbonation and CO2 levels.
- Check date on all BIBs (bags in boxes).

**WEEKLY**
- Clean the nozzles and diffusers.
- Clean the ice chute to avoid calcium and scale buildup.

**MONTHLY**
- Flush all syrup lines.
- Remove splash panel and clean cold plate behind it with warm, soapy water.

**YEARLY**
- Have water pump and check valve inspected and cleaned by a qualified service person.
- Have the CO2 gas check valve inspected and serviced by a qualified service person.
Allowing bacteria to get into or grow in the syrup lines of a soda-fountain machine can lead to a variety of issues, from the product tasting “off” to a consumer contracting a foodborne illness. Most manufacturers recommend flushing a syrup line once a month.

As a service, CSP offers this illustrated, step-by-step guide to replacing a syrup bag-in-box (BIB) and flushing the lines, collected from service manuals and instructions from several fountain manufacturers and 7-Eleven licensee Handee Marts Inc. See the manual for your fountain machine or consult your manufacturer for individual specifications and details.

Back-room ice machines—the kind that require scooping ice into a bucket and moving it to the soda fountain dispenser—are going the way of the dinosaurs as top-mounted ice machines and satellite ice machines become the standard.

While the new machines improve sanitation, the top-mount and satellite machines still have some pretty strict maintenance standards and carry the heavy burden of their ancestors.

“The transition that has been made from manually filling beverage dispensers with ice to automatic fill has been a big [step forward],” says Mike Rice, product marketing manager for ice-machine maker Follett Corp., Easton, Pa. “There are still places out there where people are taking a 5-gallon pickle bucket or whatever, scooping ice out of the back room, bringing it out to the front and then putting it in the soda dispenser. This [method] certainly provides some more opportunity for contamination along the way.”

But even as progress improves sanitation concerns, other inconveniences arise.

“The challenge that you have there, interestingly enough, is that when the ice machine sits on top of that beverage dispenser, it’s a pain to get at and clean. It’s big, and it’s heavy, and it’s right in the middle of your customer space,” Rice says. “So it becomes a little bit more of a challenge to get at it and clean it.”

But it needs to be done, both for safety and to meet local health-inspection standards.

“The Pennsylvania Department of Agriculture, the people who come around and do inspections … say if you have an ice maker that sits on top of a fountain machine, they are to be cleaned yearly,” says Jim Monroe, director of foodservice for Handee Marts Inc., a 7-Eleven licensee based in Gibsonia, Pa. “And when I say cleaned, I mean professionally cleaned.”

Most states and municipalities have their own standards, Monroe says, and he’s worked the Pennsylvania regulations into his store’s routine.

“We wipe them off and do the daily stuff, but [these professionals] pull them apart, sanitize the bin, clean the ice plates. … At the same time, the ice maker is taken off, so the bin on the fountain is emptied, cleaned and sanitized,” he says. “At this point, we probably only have two stores that have ice makers in the back and they’re dumping ice into those. Those need to be cleaned and sanitized every week.”

Meanwhile, ice-machine manufacturers generally suggest cleaning each unit every six months, and perhaps even more often depending on the conditions in which the unit is operated, says Jeff Biel, product manager for Scotsman Ice, Vernon Hills, Ill.

“In some c-stores, they’re baking things, and so you’re going to have a lot more yeast in the air, which can contribute to more mold growth and slime in your ice machine,” Biel says. “So in tougher environments like that, you should clean more often.”
At the fountain machine, activate the valve for the flavor being replaced. Flush line until all the hot water is gone. Repeat flush two or three times.

Back at the fountain, run the new flavor until all the water is flushed through the tube.

Johnsson, vice president of marketing for Manitowoc Beverage Systems-Americas, Sellersburg, Ind.

“There of [the upkeep] is predicated on the rules and guidelines that are in place by the health departments for various towns, cities and municipalities,” he says. “They’re not consistent across all 50 states, and I can’t tell you with what rigor the regulatory agencies that are responsible for that type of oversight have [to conduct inspections] within each market. … In food equipment, as in any environment where microorganisms can occur naturally or be spread by contact, it is essential to follow proven steps for cleaning and sanitizing.”

Manufacturers are beholden to the standards of the National Sanitation Foundation (NSF) when developing and selling their products.

“We do put, in every one of our user manuals, a daily and a monthly cleaning procedure that runs parallel to how we qualified our equipment to meet NSF approval,” Johnsson says. “And if those procedures are followed properly, we would never expect a problem because we’ve been given that approval to keep that equipment safe and operating properly.”

Better Safe

IMI Cornelius echoed that sentiment. It also joined in the most-often-heard refrain that, regardless of the results of the Virginia study, there have been no reports of consumers getting sick from consuming fountain beverages.

“There are thousands of Cornelius dispensers in the market, and given the lack of evidence that fountain dispensers have been the source of any outbreak of food-borne illness, we have no reason to believe there is any health concern stemming from drinking beverages dispensed from them,” the company said.

While perfectly confident Handee Mart’s policies are safe and up to his local code, CSP’s inquiries led Monroe to double-check state standards for such requirements, and the review showed Handee Mart’s standards are within the guidelines. Still, revisiting the subject allowed Monroe to consider some upgrades to the chain’s procedures.

“We probably should have something in each store, back by the [syrup box] rack, that lists by flavor the date [each line was] last flushed for our own protection,” he says. “It’s not only protecting you, it’s also ensuring the safety of your customers.”

Sources: Handee Marts Inc., IMI Cornelius, Lancer Corp. and Manitowoc Beverage Systems-Americas.