

SANITARY MAINTENANCE



Contaminated Hands?

Study finds refillable soap dispensers can be breeding grounds for bacteria

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Jan/san distributors have understood for some time that refillable soap dispensers in public facilities are prone to accumulate bacteria and other contaminants. A recent study surprised some, but for a great many in the industry, it affirmed the already-recognized need for steps to protect against such risks.

Dr. Charles Gerba, a professor of environmental microbiology in the departments of Microbiology and Immunology and Soil, Water and Environmental Science at the [University of Arizona](#) in Tucson, recently conducted a study showing that bacteria has a tendency to grow in open, bulk refillable soap dispensers at a much higher rate than conventional wisdom had previously thought.

Refillable dispensers come in a variety of options — they can be mounted on walls or in counters or even be a bottle placed on the counter in a small restroom — but all pose the same potential threat.

Dr. Gerba studied 541 soap samples from around the United States, finding that **25 percent had unsafe levels** of bacteria (more than 500 parts per million) and 16 percent contained coliform bacteria, which are fecal-based and can cause illnesses. While Gerba expected that, the volume surprised him.

"I was kind of shocked," says Dr. Gerba. "The thing that surprised me was the coliform bacteria. The major component of liquid soap is chlorosulfate, which bacterial forms like because it keeps the other bacterial forms out."

So, when bacteria like coliform contaminates soap, it thrives in it. And, unfortunately, when custodians add new soap to the old supply without rinsing out the dispensers first, it only exacerbates the problem.

"Every time you added more soap, the bacteria said, 'Good, more food,' and it apparently loved growing in there over time," says Dr. Gerba.

However, the study found no pathogens in soap dispensed via sealed systems.

"A sealed system is sealed at the factory during manufacturing where the bulk system is actually refilled at the facility," says Dr. Gerba.

Bulk soap dispensers allow for the potential of custodians diluting the soap with water to stretch supply. This can promote the growth of bacteria and other organisms, says Darrell Hicks, environmental/patient transportation services director at [St. Luke's Hospital](#) in St. Louis, and author of "Infection Control for Dummies."

Also, if custodians touch the soap with their fingers while refilling, this can contaminate the soap, says Dr. Gerba.

All Markets At Risk

Since they are such hospitable environments for bacteria, numerous healthcare facilities long ago banned the use of refillable dispensers.

"If you wash your hands, some of these bacteria are still on there," says Dr. Gerba. "Liquid dispensers aren't allowed in hospitals for these reasons, because they have caused bacterial infections. A lot of these bacteria cause urinary tract infections, so it's not something you want to get on your hands and then wipe yourself."

Contaminated soap also increases the potential for eye, skin and respiratory infections. People with open cuts or wounds on their hands are even more susceptible to infection.

Hicks uses Dr. Gerba's work in implementing policies at St. Luke's Hospital. Refillable dispensers are not allowed at the hospital, preventing cleaning staff from simply topping off the soap supply without ever cleaning out the dispenser.

"I personally have found [refillable dispensers] to be pretty repulsive because of the gunk that's in there," says Hicks. "Here we're supposed to be washing our hands and improving the cleanliness of our hands, and I think in many cases we're adding to what I call the bio-burdens of people's hands."

Hospitals aren't the only facilities with concerns. In the study Dr. Gerba singled out dispensers in fitness facilities and the number of contaminated samples jumped to 33 percent. From commercial offices to schools, many buildings currently use bulk soap dispensers, putting occupants at risk.

Pushing Sealed Solutions

Even though he was already advocating sealed dispensers, Bill McGarvey admits the study's numbers surprised him, too.

"I don't know that we knew that there was the bacterial count the study seems to indicate," says McGarvey, director of training and sustainability for [Philip Rosenau Co.](#) in Warminster, Pa. "But it was just better business sense to be able to offer the sealed system. For those

customers who have the built-in dispensers, they've got to address these issues. The reality is that they are not necessarily going to remove their built-in bulk dispensers."

Facilities end up with mounted, refillable dispensers at the behest of architects who don't know about the health issues, nor about the challenges of the cleaning professionals expected to maintain them, says McGarvey.

Many end users like these dispensers because buying soap in large quantities can save money in the long run. Also, with refillable dispensers, customers aren't limited to always buying the same brand.

But to avoid contamination, the best possible solution in most cases is to use sealed containers that are thrown out after being used, says Dr. Gerba.

Sanitary sealed systems typically use individual bags that come with their own dispensers. The bags are inserted into a casing or "box" — either counter-mounted or wall-mounted — and are simply removed and replaced in full when they are empty. In most cases, refills snap into place and the use of a new dispensing valve with each new bag eliminates the accumulation of germs.

In addition to sealed dispensers, cartridge refill dispensers are also a possible alternative to traditional refill dispensers.

Cartridge dispensers are counter-mounted or wall-mounted, and contain all working parts within the refill cartridge, so each refill is really a complete replacing of the working mechanisms within the dispenser. Users can also purchase multiple types of soap to fit in the same dispenser.

The housing for cartridge dispensers are often stainless steel — although they also come in plastic — and use separate containers and valves with every use.

Distributors can recommend switching to sealed systems when restrooms are upgraded and remodeled.

For facilities that refuse to switch and continue to use refillable dispensers, the best approach is to mitigate the problem by thoroughly washing each dispenser whenever the dispenser is empty, or every 30 days whichever comes first, says McGarvey.

"The sealed systems are probably what you want, where you throw it away after every use," he says. "But it's possible that regular maintenance and cleaning [refillable dispensers] might solve the problem."

But it's not easy to get managers to direct their employees to do that.

"They don't have time to really be messing around with it," says McGarvey. "But the onus is on them to get it done. We try to make sure they are aware of the results of the study and provide them with the information for how best to try to clear those dispensers out. But ultimately the

decision's in their hands. They're going to give (their employees) the opportunity and the time to deal with that or they're not."

Hand washing is supposed to rid users of germs, but unfortunately, that's not always the case for restrooms with refillable dispensers. To keep restroom patrons healthy, distributors will have to continue to educate their customers about the potential dangers of these dispensers and how to alleviate the threat of bacteria.