

# Washing with contaminated soap increases bacteria on hands

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People who wash their hands with contaminated soap from bulk-soap-refillable dispensers can increase the number of disease-causing microbes on their hands and may play a role in transmission of bacteria in public settings according to research published in the May issue of the journal *Applied and Environmental Microbiology*.

"Hand washing with soap and water is a universally accepted practice for reducing the transmission of potentially pathogenic microorganisms. However, liquid soap can become contaminated with bacteria and poses a recognized health risk in health care settings," says Carrie Zapka from GOJO Industries in Akron Ohio, the lead researcher on the study that also included scientists from BioScience Laboratories in Bozeman, Montana and the University of Arizona, Tucson.

Bulk-soap-refillable dispensers, in which new soap is poured into a dispenser, are the predominant soap dispenser type in community settings, such as public restrooms. In contrast to sealed-soap dispensers, which are refilled by inserting a new bag or cartridge of soap, they are prone to [bacterial contamination](#) and several outbreaks linked to the use of contaminated soap have already been reported in healthcare settings.

In this study Zapka and her colleagues investigated the health risk associated with the use of bulk-soap-refillable dispensers in a community setting. They found an elementary school where all 14 of the soap dispensers were already contaminated and asked students and staff to wash their hands, measuring bacteria levels before and after

[handwashing](#). They found that Gram-negative bacteria on the hands of students and staff increased 26-fold after washing with the contaminated soap.

"This is the first study to quantitatively demonstrate that washing hands with contaminated liquid soap actually increases the number of Gram-negative bacteria on hands. Furthermore, the results directly demonstrate that bacteria from contaminated hands can be transferred to secondary surfaces," says Zapka.

Zapka notes that all the participants' hands were decontaminated after testing by [washing](#) with uncontaminated soap followed by hand sanitizer. At the conclusion of the study, all the contaminated soap dispensers were replaced with dispensers using sealed-soap refills. After one year of use, not one of them was found to be contaminated.

**More information:** A copy of the research article can be found online at [aem.asm.org/cgi/content/full/77/9/2898](http://aem.asm.org/cgi/content/full/77/9/2898)

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