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How to Wash Up in the Wilderness

Ben Harder

Many campers who wash their dishes and utensils in the wilderness use methods that don't consistently remove all bacteria.

According to new research, even professional expedition companies that employ one of several well-established, three-step washing procedures may place their clients at unnecessary risk of getting gastrointestinal illnesses. An alternative system that uses the same amount of water and involves the same number of rinses is more hygienic, says microbiologist Joanna Hargreaves, who conducted the new study.

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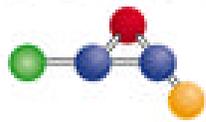
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Gastrointestinal illnesses are common among backpackers and other campers, in part because water found in the wilderness can be contaminated with bacteria or parasites. In 2004, a study found that 56 percent of backpackers on the Appalachian Trail develop diarrhea, and those who don't always treat their water to disinfect it face a 69-percent risk of illness.

However, 45 percent of the Appalachian hikers who consistently treated their drinking water also got diarrhea in that study. So other hygiene lapses—including inadequate washing of hands, dishes, and eating utensils—are apparently major threats to health in the wilderness, Hargreaves says.

One person with unclean hands might infect other members of his or her party by improperly handling shared eating implements.

"The larger the group, the higher the potential for an unhygienic individual to put higher numbers [of fellow campers] at risk," Hargreaves says.

Three bowls

To clean eating implements adequately, Hargreaves proposes a rigorous approach to washing in which backpackers would first fill each of three large bowls or buckets with about 5 liters (1 1/3 gallons) of clean water. Next, add 5 milliliters (1 teaspoon) of detergent to the first container and 10 ml (2 tsp) of 4-percent chlorine bleach (a common commercial

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preparation) to the second.

To wash dishes and utensils, remove most food residues in the first bowl and, in the second, scrub the items until they are visibly clean. A quick rinse in the third bowl removes the odor of the cleaning chemicals.

None of the expedition-organizing companies that Hargreaves polled reported using the proposed method, although many used three-bowl systems, she says. Twenty-six companies responded to her inquiry.

Among existing three-step dishwashing systems, the first bowl commonly contains water and detergent and is used for a vigorous wash that removes all visible food residues. A quick dunk in a second bowl, which contains only water, rinses items. The final brief dip is in a bowl of water spiked with bleach or a similar disinfectant.

Hargreaves tested two variations on that system—one using bleach, the other using a commercial disinfectant called Dettol—her own approach, and 15 other three-bowl washing systems. For each trial, she intentionally contaminated at least five standard field dishes with the common food-poisoning bacterium *Escherichia coli* and then measured the number of bacteria on their surfaces after washing.

In the June issue of *Wilderness and Environmental Medicine*, she compares the results of the 10 most-effective approaches. She found that the detergent-containing bowl in her proposed method removes about 90 percent of the bacteria from the contaminated mess tins. The



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second step—scrubbing in bleach—removes the remaining bacteria, and the final, plain-water rinse minimizes the residual odor of the disinfectant.

By comparison, the methods that are currently most popular among expedition companies removed more than 99 percent of bacteria during the first step. But the quick rinses after that step failed to consistently remove remaining bacteria.

That's why Hargreaves and other wilderness-medicine experts recommend that campers adopt the new system.

Making do

"The recommendations reported in this study apply to all parties, from large expeditions to individuals, who routinely practice the three-bowl system for washing up," says Joe McLaughlin, a medical epidemiologist at the Alaska Division of Public Health in Anchorage.

Of course, Mother Nature doesn't always provide campers with clean water, so dishes and utensils might become recontaminated during the final rinse in Hargreaves' system.

"If the water used for washing the dishes is of dubious quality," McLaughlin says, "then the first two bowls of the proposed system should be used alone."

The findings may have greatest relevance for large expeditions, says

Hargreaves.

"It would not really be practical for individual backpackers to carry three bowls," says Hargreaves, who conducted the poll of companies and lab experiments while working at Southmead Hospital in Bristol, England.

She hasn't studied individuals' wilderness washing practices in detail, but she speculates that most backpackers "use river water or sand, with no disinfectant and possibly no detergent."



References and sources for this article

References:

Boulware, D.R. 2004. Influence of hygiene on gastrointestinal illness among wilderness backpackers. *Journal of Travel Medicine* 11(January):27-33. Available at <http://www.blackwell-synergy.com/doi/abs/10.2310/7060.2004.13621>.

Hargreaves, J.S. 2006. Laboratory evaluation of the 3-bowl system used for washing-up eating utensils in the field. *Wilderness and Environmental Medicine* 17(June):94-102. [Abstract](#). Reprint available at http://www.allenpress.com/pdf/weme_17_209_94_102.pdf.

Sources:

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