

Tainted spinach: All bacteria may not come out in the wash

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By Julie Schmit, USA TODAY

The serious dirt on produce is not the kind you can see.

Those ready-to-eat bags of spinach, lettuce and mixed greens in grocery stores may boast that they've been "thoroughly" or "triple" washed, but that's no guarantee they're free of nasty bacteria.

Washing it yourself may add risk, because bacteria on hands, utensils or in the sink could contaminate the already washed produce.

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As fresh spinach returns to supermarkets, the unsolved E. coli outbreak that spread to 26 states has forced many consumers to reconsider the safety of packaged greens — and how little they can do about it.

The \$4 billion packaged lettuce and spinach industry has safety measures. But the standard process — washing lettuce and spinach with chlorinated water — kills just 90% to 99% of microbes, which include bacteria. And that's only if the process is done well, which government inspection records show is not always the case.

"People think it removes everything, but it doesn't," says Jack Guzewich of the Food and Drug Administration's food safety center.

Growers and processors pointed out their triple-wash procedures when the outbreak became a national news story Sept. 15. Product was recalled, and consumers were warned to abstain from fresh spinach.

What was largely left unsaid was that the triple washing of greens in the factory is intended to help prevent bacteria from spreading and "NOT to surface sanitize produce," says an April industry report, Commodity Specific Food Safety Guidelines for the Lettuce and Leafy Greens Supply Chain.

In fact, there's no "effective kill step" for leafy greens that would not damage them so much that they'd no longer be fresh, says Trevor Suslow, research specialist at the University of California, Davis. When juice and milk are pasteurized, generally 99.999% of contaminants are killed.

Leafy greens have to be handled more delicately, and chlorinated-water washes have long been the preferred method.

"Once the product is inside the (factory), it is the most important step to minimize risk," says Wil Sumner, director of food and agriculture testing for Scientific Certification Systems of Emeryville, Calif., which audits company practices and certifies product. Simply washing produce with regular water only removes 60% to 90% of microbes, Sumner says.

But produce companies vary in how well they wash. "Some companies are right on top of it. Others are not so much," the FDA's Guzewich says.

From 1998 through 2004, the FDA inspected 36 domestic and foreign produce farms, including packing sheds where produce was washed and packed. The FDA found 12 instances in which chlorination measures fell short — including lack of chlorine, inadequate amounts, no monitoring of levels and at least one instance in which workers didn't understand the measurements, Guzewich says. The FDA didn't name farms. Nor were lettuce and spinach farms the only ones inspected. Apples, tomatoes, melons and sprouts are also often washed with chlorinated water, Sumner says.

But state and federal records reveal similar failures:

- After a 2003 E. coli outbreak in which 57 people got sick in Southern California, state inspectors said the tainted lettuce was packaged into bags by Gold Coast Produce in Oxnard, Calif.

While investigators never identified where the E. coli originated, the FDA found conditions at Gold Coast to be so poor that the agency declared its product adulterated, says an FDA warning letter to the firm.

Investigators also found that Gold Coast, which went out of business after the outbreak, used 1.5 to 3 parts per million of free chlorine, meaning chlorine available to kill bacteria, in its lettuce processing line.

"That would likely be a wholly inadequate amount of chlorine," says Suslow. He says 15 ppm to 20 ppm of free chlorine is more typical.

In addition, Gold Coast failed to test chlorine levels in water used to clean equipment, the state report said. Dirty equipment can spread bacteria.

- In 2002, California and federal investigators traced another E. coli outbreak, this time largely in Washington and affecting 46 people, to California's Salinas Valley, the nation's No. 1 leafy green producer. Again, the source proved elusive. In their report, investigators said one company, Unikool Cooling, lacked proper procedures to maintain water quality to prevent contamination from spreading. It didn't document chlorine levels in water used to cool lettuce. Unikool plant foreman Rick Gothard says the company now documents chlorine levels.

Monitoring left to companies

Federal regulations require food processors to follow good manufacturing practices to minimize contamination. But regulators issue only general guidance to companies on how to do that.

In general, chlorine levels in wash water should rise with the amount of produce being handled, Sumner says. They are far higher than chlorine levels in regular tap or pool water. Organic producers use chlorinated water, too, although sometimes at lower concentrations. Monitoring is also left to the company.

Big companies are likely to have good processes in place, but smaller ones, which may lack financial resources, can be a bigger concern, says Suslow, who advises industry on good practices.

Also, the industry continues to battle expectations that triple washing catches all bacteria. The industry is continually educating growers and others that they "can't count on that step (triple wash) as a pasteurization step," says David Gombas of the United Fresh Produce Association. "We don't want to set up any false expectations that they can relax and expect the washing to take care of it."

For three weeks, state and federal inspectors have swarmed over farms and companies in the Salinas Valley in California, looking for the source of the deadly E. coli O157:H7 strain tied to 193 infections, including one death, in 26 states and Canada.

Last week, the FDA said consumers can again eat fresh spinach as long as it isn't involved in the recall. It traced all the implicated spinach to a major processor, Natural Selection Foods of San Juan Bautista, Calif. Natural Selection recalled its spinach products. Four other companies that repackaged produce from Natural Selection also recalled product. The investigation continues into where and how the outbreak started.

Problematic packaging?

Since 1995, lettuce or spinach has been associated with 20 E. coli outbreaks, the FDA says. The last nine outbreaks involved packaged product, which accounts for 80% of the \$4.4 billion American consumers spent in the last year on lettuce and spinach, says The Perishables Group, a market research firm. Packaged lettuce was the far biggest seller: \$3.2 billion.

The industry also maintains that the packaged product is safe to eat straight from the bag — even given the limits of triple washing. "There is no kill step, but we have many food safety practices in place," says Tanios Viviani, president of Fresh Express, the leading packaged salad maker.

He says Fresh Express reviews everything from the quality of seed, to the fertilizer, to how far cattle — a source of E. coli — are from fields. "Triple wash is just one of the steps," he says.

Other processors, including Dole Foods, which says it pioneered the triple wash procedure, refused interviews because of the ongoing E. coli investigation.

There also is no research that has shown packaged greens pose a higher contamination risk than whole lettuce heads or bunched spinach, says Thomas Whittam, professor of microbial evolution at Michigan State University.

Yet, others say there's reason for concern. "The number of outbreaks indicates there's a problem" with packaged products, says Mike Doyle, director of the University of Georgia Center for Food Safety.

Much of today's lettuce that's packaged is cored in the field. Bacteria is harder to remove from cut surfaces of produce, and may even move into a plant via exposed pores, says Whittam. Once inside a processing plant, a contaminated leaf may mingle with many others, possibly spreading bacteria. Or, insufficiently chlorinated water may spread contaminants.

When a consumer buys a head of lettuce, chances are the outer leaves, where contamination is most likely, were taken off in the field, says Sumner. But the head wouldn't get a chlorinated wash.

Gombas, of the produce association, says there may be more reports of E. coli outbreaks in packaged vs. unpackaged lettuce and spinach because packaged products are more popular and are more widely distributed. A head of lettuce most likely would be eaten by one household, and if contaminated with E. coli, the incident may go unreported or unnoticed, he says. If that same head of lettuce was chopped up and put into bags, pieces may get into several households and make an outbreak more noticeable, he says.

Bagged 'is safer'

While Doyle won't eat packaged lettuce or spinach, Christine Bruhn, director of the Center for Consumer Research at the University of California, Davis, says "the bagged product is safer" than its home-washed, unpackaged counterpart.

Given previous E. coli outbreaks in lettuce, California officials earlier this year convened a panel of food safety and industry experts to re-evaluate whether packaged lettuce and leafy greens should be rewashed before being eaten.

The panel decided no, as long as the product was labeled "washed," "triple washed" or "ready-to-eat" and came from a government inspected facility.

Bruhn, a panel member, says rewashing may increase risk because consumers are unlikely to sanitize hands, nails, sinks and utensils. That requires a good cleansing and chlorinated water rinse. "Most consumers are quite casual," Bruhn says.

While no produce is guaranteed 100% free of bacteria, cooked, canned or frozen produce comes closer than raw, Bruhn says. If you eat raw lettuce or spinach, you take a risk, she adds. "But it is a small risk. The industry does a superb job of washing."

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