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Spinach recall: 5 faces. 5 agonizing deaths. 1 year later.

By Elizabeth Weise and Julie Schmit, USA TODAY

Ruby Trautz was the first to die.

On Aug. 27, 2006, the 81-year-old Nebraska woman was rushed to the hospital. She was in so much pain that morphine was administered. Four days later, she succumbed to a food-borne infection later identified as a virulent strain of E. coli.

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Two weeks after Trautz's death, on Sept. 14, the Food and Drug Administration took an unprecedented step: It told Americans to stop eating bagged spinach, a staple of healthy diets, until its safety could be assured. A day later, the FDA extended the warning to include all fresh spinach and almost as quickly, it vanished from grocery shelves, salad bars and menus.

By this time, two more people had died.

Before the outbreak of E. coli O157:H7 was over, at least five people were dead after painful, bloody illnesses. More than 205 others in 26 states had endured a sickness that left them vulnerable to future health problems. And the agricultural industry, government regulators and consumers were shaken by the vulnerability of America's system for delivering fresh produce to markets.

Since early this year, USA TODAY has interviewed dozens of key government officials, food producers, survivors who ate contaminated spinach and relatives of those who died. They offer new insight into the behind-the-scenes panic throughout the agricultural industry and government offices as the crisis unfolded nationwide, and of the detective work that led officials to suspect that the E. coli — commonly found in cow manure — came from spinach grown on a 2.8-acre plot in central California.

The FDA would partially lift the spinach advisory on Sept. 22, but it would be six months before federal and state investigators released their report.

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The outbreak would ultimately cost the leafy green industry more than \$350 million as the nation turned away from its growing appetite for fresh, ready-to-eat spinach. It's an appetite that has not returned: Sales of packaged spinach are still off about 20% from pre-outbreak levels, industry executives say.



The interviews reveal vivid details of the gruesome illnesses caused by the contaminated spinach, and show why such a deadly crisis remains possible today. In the past year, the industry has made strides in keeping produce safe, says Michael Doyle, head of the Center for Food Safety at the University of Georgia and a consultant to Natural Selection Foods, which processed the tainted spinach.

But while companies have imposed higher standards for farmlands and have increased testing of the greens before they get to the consumer, it's still possible for bacteria to get through the safety net.

In the past four weeks there have been two leafy green recalls, one for E. coli in mixed greens and another for salmonella in spinach. No illnesses were reported.

"Raw produce, even if you put it in a bag and seal the bag, is still raw produce. It's a high-risk food, even if the American consumer doesn't realize it is," says Oregon state epidemiologist William Keene.

One year ago, that risk changed families, an industry and consumer attitudes toward fresh spinach.

The victims

In July, the month before Trautz died, a 2.8-acre section of a 51-acre field was planted in spinach by grower Mission Organics at the Paicines Ranch in central California, an 8,000-acre spread largely devoted to cattle grazing.

The 1,002 pounds of spinach from that 2.8-acre section was harvested on Monday, Aug. 14, and processed the next day by Natural Selection Foods, one of the nation's biggest processors of leafy greens. The spinach went mostly into bags of Dole Baby Spinach, each tagged with the production code P227A. It was shipped nationwide.

FDA and California investigators would later say that spinach from this small section of the Paicines Ranch most likely carried the deadly E. coli strain into the homes of unsuspecting consumers.

They were consumers such as Polly Costello, who on Monday, Aug. 21, bought a package of Dole Baby Spinach at No Frills Supermarket in Bellevue, Neb. She, her husband and her mother, Ruby Trautz, would eat spinach from the bag over the next few days.

By that Saturday, Trautz was sick with nausea, vomiting, abdominal cramps and diarrhea. On Sunday she began passing blood, and her daughter and son-in-law rushed her to Creighton University Medical Center in Omaha.

When a nurse examined her on Sunday, Aug. 27, Trautz was light-headed and in extreme pain. On Thursday, after five days of increasing weakness, Trautz began to hallucinate and have seizures. She died at 6:15 a.m. that day.

Her doctors had no idea what had killed her. It wasn't until Sept. 25 that tests on the spinach from her daughter's refrigerator showed she had been infected with E. coli O157:H7.

The second death came Sept. 7, a week after Trautz's, when 77-year-old Marion Graff of Manitowoc, Wis., succumbed to kidney disease. Graff had always been a healthful eater. "My mother would cover her plate in salad," says her daughter, Leah Duckworth.

A woman who'd blossomed with age, Graff was with friends on a bus trip to Minneapolis for a weekend of museums and theater when she lost consciousness.

Graff deteriorated so quickly that Duckworth, on vacation in Canada, couldn't get home in time. Her sister, Annie Banks, held the phone to their mother's ear and Graff said, "I love you, my little mommy. Now it's time." Their mother died about 90 minutes later.

Next was June Dunning who, even at 86, was "a very proper British lady" who made a point of leading a healthy life, says her son-in-law, Chuck Swartz. Dunning lived with Swartz and her daughter Corinne in Hagerstown, Md. She got sick Friday night, Sept. 1, several days after eating lightly steamed spinach from a Dole bag. True to her stiff-upper-lip nature, Dunning didn't bother her family about the pain.

The next morning Corinne went into Dunning's room "and found this huge bloody mess all over," Swartz says. Corinne took her mother straight to the hospital.

It wasn't until Wednesday, Sept. 6, that tests showed she had E. coli O157:H7. "I said, 'What's that? That sounds like something from

Mars,' " her son-in-law says. "The infectious-disease doctor said it came from hamburger. We said, 'She doesn't eat hamburger; she loves vegetables.' " Dunning lasted for another week.

The fourth fatality was the youngest, 2-year-old Kyle Allgood of Chubbuck, Idaho. Kyle had been born at home before his mom and dad could make it to the hospital. "He was in a hurry coming into this world, and he was in a hurry to leave it," says his mother, Robyn Allgood.

Kyle came down with flu-like symptoms on Friday, Sept. 15. His mom had worked hard to make sure her kids got good nutrition. A favorite trick was the veggie smoothie. "If you put enough berries and juice and yogurt in them, you can put spinach in, so I did," she says.

But it soon became clear that Kyle had something much more serious than the flu. The whole family got sick, but his mom, dad and his older sister fought it off. Kyle couldn't. He was rushed to the local hospital, then to Primary Children's Medical Center in Salt Lake City.

There, Kyle developed hemolytic uremic syndrome (HUS). His kidneys shut down. On Wednesday, Sept. 20, he had a heart attack and died, his parents at his bedside.

The last death occurred on Jan. 26, 2007, when Betty Howard of Richland, Wash., succumbed to heart failure after a long battle with HUS. Howard, 83, got sick after eating a turkey sandwich garnished with spinach. She went into the hospital on Sept. 7 and from there to a convalescent facility, never returning home.

Howard and Dunning were not counted in the Centers for Disease Control and Prevention's final list of victims. Seattle-based Bill Marler, considered the nation's pre-eminent E. coli lawyer, who represents Howard's and Dunning's families, says the bacteria that felled both matched the spinach outbreak strain. Their medical bills were paid by Natural Selection's insurer, Marler and Dole say. Natural Selection declined to comment.

Dozens of others would become dangerously ill. Of the 200 confirmed cases of sick people, 102 were hospitalized and about 15% would suffer kidney failure — a condition that could affect them for the rest of their lives.

In Milwaukee, two of Ana Maria Zientek's children, David, then 6, and Caroline, then 3, were sickened by the spinach salad they'd eaten at dinner on Aug. 28, suffering severe cramps and diarrhea.

Blood "literally poured" out of Caroline as her mom bundled her up in a sheet and raced to the hospital. David was hospitalized for six days, his sister for 13.

For Jillian Kohl of Milwaukee, the nightmare began on Wednesday, Aug. 30, with a spinach salad. Being a thrifty grad student, she ate a lot of it, because the expiration date on the bag was that day.

Over the next few days the 25-year-old marathon runner started to feel tired and worn out. By the weekend she was feverish and nauseated. She called her mother, who told her to rest and take aspirin. But on Monday, the bleeding started, putting her in a hospital's intensive care unit for eight days.

At one point, as her body began to shut down, she thought, "I give up. I had a good 24 years in life, and I hate that my family is going to have to see me die like this."

The regulators

In the early days of the outbreak, Wisconsin and Oregon, both known for their strong public health departments, took the lead in trying to figure out what was making people sick.

Wisconsin, which has an aggressive E. coli monitoring network, was the first state to realize that something was wrong.

When the week of Sept. 4 began, chief state epidemiologist Jeffrey Davis knew that he had a cluster of five E. coli O157:H7 cases. But most of the victims had gone to the Manitowoc county fair — a common place for E. coli to spread, because cows and other animals excrete the bacteria in feces.

And small clusters aren't uncommon; in any year Wisconsin may have around 200 cases. Davis adopted a wait-and-see approach.

But there was one confusing twist. Graff, who would become the second fatality, hadn't gone to the fair.

By midweek, there was an outbreak in another county, and a pattern was emerging. On Thursday, Sept. 7, the day Graff died, the director of the BloodCenter of Wisconsin told Davis he'd gotten requests for plasma for five people at five hospitals, all of whom had

HUS. "That was very, very unusual," Davis says.

Wisconsin confirmed that all the hospitalized people had the same strain of E. coli O157:H7 and posted three of the test results Friday to PulseNet — a national database launched in 1998 that allows public health officials nationwide to track food-borne illnesses.

Davis then called Chris Braden, chief of the Outbreak Response and Surveillance Team at the CDC, to alert the federal agency.

By themselves, the Wisconsin cases didn't mean much. "There's always a certain number of background cases," says Robert Tauxe, chief of the food-borne and diarrheal diseases branch at CDC. In August, for example, PulseNet had had nine different E. coli strains from nine states.

The Wisconsin cases were different from the usual, unrelated cases but no one knew that yet. But they were now out there, waiting to see if anyone, anywhere else in country, was also infected with the identical E. coli strain.

By Tuesday, two other states had posted matches, PulseNet records show.

On Wednesday, Sept. 13, Robert Brackett, head of the FDA's Center for Food Safety, got an e-mail from Wisconsin asking if there was contamination reported in lettuce.

As lettuce had been the major source of more than a dozen O157:H7 outbreaks, it was a good question. But the FDA wasn't tracking anything in lettuce, so the answer was "no."

Oregon had a little E. coli cluster going, as well. But it wasn't initially viewed as a big deal — until Sept. 13. Melissa Plantenga, an investigator, told senior epidemiologist William Keene that of the six people who were sick, five said they'd eaten bagged spinach, although they named four different brands.

Keene wasn't surprised: Fresh spinach was a very plausible vehicle for E. coli O157:H7 because there is no guaranteed "kill step" in readying it for consumption. Bagged salads are washed and re-washed in processing plants, making them safe to eat straight from the bag, companies say. But the wash doesn't eradicate all bacteria.

Keene might have reacted more forcefully if he'd been able to check PulseNet and see that other states were reporting E. coli cases, too.

But he couldn't do that because the state had been bounced off PulseNet. A CDC-issued device that generates the security codes that allow states to log into the computer network had expired and the new one hadn't yet arrived in the mail.

Keene called officials in California, where most of the nation's leafy greens are grown, and learned that it isn't unusual for multiple brands of packaged bags to come from the same plant.

It was all falling into place. Keene pounded out a somewhat cryptic e-mail to the CDC: Oregon had a cluster of O157:H7 cases, and he wondered if anyone else was seeing anything similar. Ten minutes later, the CDC e-mailed him back, saying yes, there were a *lot* of other cases out there.

So Keene also called Braden, the CDC's top food-borne illness epidemiologist. Wisconsin's Davis was patched in, and the three men began comparing what they knew. "At that point, Phase One of the investigation was over," Keene says. Wisconsin and Oregon had shown the outbreak was O157:H7 from spinach. Within 24 hours, the rest of the nation would know as well.

That day, June Dunning died in Maryland.

That night the CDC asked all 50 state public health departments if anyone else was seeing E. coli cases. The next morning, Sept. 14, the CDC had heard from eight states reporting 50 cases. It was looking like a nationwide problem.

By noon, CDC and FDA officials were having their own conference call with their state counterparts. The CDC asked each of the eight states to list the number of cases, the number of hospitalizations, how many kids, how many with HUS and how many dead. The FDA's chief medical officer, David Acheson, took notes.

"I'm writing this all down, and I get to page three and I'm thinking, 'Oh dear,' " he says. For every reported case, he knew there would be many more that hadn't yet been reported or noticed by state health officials.

Some states had sick consumers reporting eating lettuce; some said strawberries. But more said spinach, even bagged spinach with household-brand names on it, including Dole.

Indeed, 80% of the consumer cases at that time recalled eating spinach, an incredibly high number to be coincidental as only about 17% of the U.S. population routinely eats spinach.

The call lasted at least two hours. At the end of it, "We were looking at each other saying, 'This was big,' " Acheson says.

The FDA team met in what would become their war room, a slightly worn conference room on the 12th floor of the Office of Emergency Operations at the agency's Rockville, Md., offices.

In the next two hours, the 10 or so people in that room would decide to tell the American people to stop eating a single product. Not a brand. Not a lot number. Not a production day. An entire product — bagged spinach.

The FDA, concerned that consumers may not know if bagged spinach was dumped out of bags and into loose-leaf bins at grocery stores, expanded the advisory the next day, Sept. 15, to cover all fresh spinach.

The pronouncement was so big that FDA lawyers questioned the agency's press officer, Julie Zawisza. She remembers them asking: "Do you realize that you're saying, 'Don't eat any raw spinach from any source, anywhere, anytime?' "

The FDA did, Zawisza responded, and the media onslaught began.

Acheson was driving home when he got a call: CNN wanted to do a phone interview. When would he be home? He finally dropped off to sleep shortly before midnight. One of his lingering thoughts: "Could this have been deliberate?"

The industry

The news hit the processors and growers of America's \$3.5 billion packaged-salad market hard. In California's Salinas Valley, nicknamed "America's salad bowl," producers of leafy greens gaped at CNN as they listened to the FDA's warning that an E. coli outbreak was likely underway.

Executives — scattered on Sept. 14 — quickly got back to their offices. Dole Fresh Vegetables President Eric Schwartz was on the East Coast for a business trip. Natural Selection President Charles Sweat was in San Diego visiting customers. Both immediately caught flights home.

Tanios Viviani, president of Fresh Express, the biggest maker of packaged salads in the USA, turned on CNN and learned that a big part of his industry had been shut down. "It was like an earthquake," he says. "I was thinking to myself: 'Why am I learning about this from CNN?' "

Barbara Cassens, district director of the FDA's San Francisco office, got on the phone with executives from companies that made or sold spinach that sick consumers reported eating: Dole, River Ranch and Natural Selection.

For Sweat, one tidbit from that conversation would plunge his company into the biggest crisis of its 22-year history: About 6 out of 10 consumers who reported illnesses thought they'd eaten Dole spinach. Natural Selection made that product.

California officials suggested a recall, Sweat says. The next day, Natural Selection recalled products made at its plant in August and September for 28 brands, including Dole. None other than the Dole Baby Spinach processed by Natural Selection would ever test positive for the E. coli outbreak strain.

In fact, the contaminated produce appears to have been concentrated in 42,000 bags of Dole Baby Spinach processed during a single shift in one plant.

The recall was much bigger because, at the time, no one was sure how many products or processors were involved. Within seven days of Natural Selection's recall, five more companies would recall produce. All had products made for them by Natural Selection.

As soon as the outbreak was confirmed, investigators began hunting for production records that could lead back to the point of contamination, something that had never been accomplished in 19 previous E. coli leafy-green investigations since 1995.

Everyone in the Salinas Valley produce community was fearful, says Bradley Sullivan, a lawyer for grower Mission Organics, which would later be identified as the most likely grower of the tainted spinach.

Sullivan says growers and processors were on the phone constantly, sharing rumors and details. "In those first days, everybody was nervous. All the processors. All the growers," he says. "They were asking, 'If it is me, could I go to jail?'"

Otto Kramm, managing partner of Mission Organics, which is 85% owned by the same investors who own two-thirds of Natural

Selection, was feeling pretty safe, Sullivan says. He thought his spinach had been harvested too late to make it into bags that were beginning to sicken people on Aug. 23. "We thought it would still be sitting in a cooler somewhere," Sullivan says.

That would turn out to be a wrong assumption. Of the 850 soil, water and feces samples collected by California and FDA investigators, only those from the Paicines Ranch, where Mission Organics farmed, would match the outbreak strain.

None of that was known on Sunday, Sept. 17, when executives from Natural Selection, River Ranch and Fresh Express, which by now had also been named by sick consumers, met at the Residence Inn in Salinas with regulators.

The dozen participants, in casual dress, rearranged the tables in the hotel's meeting room into a horseshoe shape so they could see each others' faces. Some executives had boxes of production records before them, says Jim Lugg, food safety chief at Fresh Express, which had prepared a one-page document explaining how it would gather electronic records. The doors were shut, and then there was silence.

No one knew how to get started as "we were all equals," Lugg says. By the time the one-hour meeting ended, the companies had told the officials how they would gather production records for the past three months. Lugg suspects the officials had expected to get them that day.

That, too, would turn out to be a wrong assumption.

The investigation

With at least three processors to check out, it would take almost two weeks for investigators to narrow their search from 12 fields to the final four. Investigators even pulled empty spinach bags out of consumer garbage cans to get clues. "It was like a big treasure hunt," says the FDA's Cassens.

Indeed, tracing the contaminated produce that people ate back to the greens processed by Natural Selection and the field they came from involved thousands of pages of documents, some handwritten.

Even with a record in hand, Kevin Reilly, then an investigator for the California Department of Health Services, says investigators must verify that what is on the record jibes with what plant managers and workers say happened. "It is a CSI-like investigation," he says, referring to the popular CBS show.

A big break came on Sept. 20, when researchers in New Mexico proved that the strain of O157:H7 from the P227A Dole bags of spinach was identical to the strain that was infecting people. The code indicated the product was made at Natural Selection's south plant (P) on the 227th day of the year, (Aug. 15) on the first of two shifts (A). "It was the first time we had a code, a bag of product and an E. coli match," says the FDA's Cassens.

That was also the day on which 2-year-old Kyle Allgood died.

Even with the confirmed P227A code, Cassens says it would take investigators seven days of poring through records to narrow the investigation to what turned out to be the four ranches that supplied the P227A product.

On Sept. 22, the FDA felt confident enough to tell consumers that it was safe to eat spinach grown outside three California counties: Monterey, San Benito and Santa Clara. The contaminated product, it was later discovered, most likely came from San Benito and the 2.8-acre slice of the 51-acre field on Paicines Ranch.

That entire field now sits fallow along a lonesome stretch of highway that cuts through a narrow valley between hillsides covered in brush and grass. Natural Selection says an extensive risk assessment will be done before it will be considered for leafy greens again.

The grower, Mission Organics, didn't have an outside company check the field's food-safety risks before last year's outbreak, investigators said. Sweat of Natural Selection says the company requires such third-party audits for every ranch that supplies it, and now checks to make sure its growers comply.

FDA and California investigators issued their report on March 23, almost two months after the death of Betty Howard. They didn't pinpoint how the spinach was tainted, saying the culprits that carried the O157:H7 might have been wild pigs that lived near the field or irrigation water from wells not grouted to prevent seepage from groundwater exposed to feces.

The investigators also said there was no evidence that the contamination started at the Natural Selections plant. But they said conditions inside the plant may have allowed pathogens to spread.

There were no indications that the contamination was the product of a deliberate act.

Epilogue

This outbreak was home-grown, unlike the most recent spate of food-safety scares involving products from China, which have re-ignited concerns about the nations' food-safety defenses. State and federal health officials say they will respond more forcefully because of the lessons learned in the E. coli outbreak.

Since last fall, companies have taken thousands of acres out of leafy-green production because they've been deemed too close to pastures, wildlife or other risk factors — and they've added miles of fencing, including on the Paicines Ranch.

Processors in California, where the bulk of the nation's leafy greens are grown, have also agreed not to buy from growers who don't meet a defined set of safety standards — an industry first.

Some companies are improving their ability to track a bag of produce back to where it was grown. That will aid investigators and help limit the size of recalls. Dole is implementing a high-tech system that it says will enable it within minutes to track a contaminated bag back to within 30 feet of where the product was grown in the field.

Companies are also doing more testing for E. coli and salmonella in raw, leafy greens and, for the first time, in the finished product, too.

While some companies say such testing may provide a false sense of security because such a small percentage of the product is actually tested, just such a system late last month may have prevented another illness outbreak caused by contaminated spinach.

California's Metz Fresh retrieved more than 90% of 8,118 cases of potentially salmonella-contaminated bagged spinach before they got to consumers. Metz had tested the bagged produce as it came off the processing line and detected salmonella, leading to a recall.

In the past, the salmonella may never have been detected until someone got sick. No illnesses were reported, the company says.

Parts of the industry — and some lawmakers — have advocated that the FDA, which already regulates processing plants, start to oversee growers. The FDA's Brackett says the establishment of mandatory federal rules for growers has been discussed as one of several options related to produce safety.

For some, this will never be over.



By Darren Hauck for USA TODAY
Paul Zientek runs as son David and daughter Caroline play near their home. The Milwaukee siblings became seriously ill after eating spinach last year, and both now carry a risk for kidney disease.

Milwaukee's Jillian Kohl has resumed her graduate studies in art therapy, which were interrupted in their first week by her hospitalization. Her kidney function is normal now, but her doctors say there is a 30% chance that in the next 10 to 20 years they could fail again

"By the time I am 40 to 45 years old, I could be laying in a bed hooked up to dialysis machines again. I know death is inevitable, but sometimes it feels like quite a load to carry, knowing a rough timeline has potentially been put on my life," she says.

Kyle Allgood's family decided not to sue Dole. "We really trust in God," his mom, Robyn, says. "We felt that if he'd meant for Kyle to stay, he would have helped him fight it."

Natural Selection's Sweat says he learned of Kyle's death on the eve of his 45th birthday. "That was the one that took me to my knees," he says. "I was on my knees, in my home."

After Kyle died, the Allgoods' neighbors held a bake sale to buy benches in Kyle's name for a park in which he and his little sister played. Robyn wasn't sure she could walk past that park with her oldest daughter when school started this year. It was just too painful. But two weeks ago she did and was buoyed by what the benches represented.

"It's all the love there. I just don't think people understand what that meant to us."

For Zientek, grocery shopping is a different experience today. "We were somewhere, and my children naturally reached for some lettuce that was there and I had to stop myself from saying, 'No, put that down,' as if it was something really bad." She sighs. "I don't want them to grow up like that."

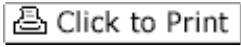
While the kids are healthy today, they, too, carry a greater risk for kidney disease and will need to be tested for the rest of their lives.

"People think life goes on," Zientek says. "But you're never really the same."

Do you worry about eating "pre-washed" spinach right out of the bag?

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