



THE \$5,000  
HIDING IN  
YOUR HOME

HOW TO SPOT  
A DEADLY  
DRIVER

**Halle Berry**  
From homeless  
shelter to  
Hollywood fame

# Reader's Digest

rd.com

HOW SAFE IS YOUR  
**FOOD?**



April 2007  
\$2.99



**TAX  
OUTRAGE**  
You Pay,  
They Cheat





# THE NEW Food Fight

Spinach is still in the headlines. The good news: High-tech advances are making what you eat safer than ever.

BY IRENE S. LEVINE, PHD

LAST SEPTEMBER, two-year-old Kyle Allgood of Chubbuck, Idaho, died of kidney failure after drinking a spinach smoothie made by his mother. Everyone wondered, How could spinach, the superhero of leafy greens, the legendary source of Popeye's strength, make a healthy kid so sick?

Kyle's death turned out to be part of a widespread outbreak of *E. coli*

O157:H7 (the most dangerous strain of the bacteria) linked to fresh bagged spinach. The Centers for Disease Control and Prevention (CDC) reported 199 cases in 26 states, resulting in 102 hospitalizations and two other deaths. The source of contamination was eventually traced to a stream and to cattle and wild pig feces in the fields of California's Salinas Valley. But no one is quite sure exactly how or why the contaminants affected the crop.



In a country blessed with rich soil, where farmers are sometimes paid not to produce crops, you could assume this was a fluke. But a mere two months later, another leafy green scare hit the headlines. The CDC confirmed that 71 people were sickened by that same dangerous strain of *E. coli* in five Northeastern states after eating at Taco Bell restaurants. Shredded lettuce was the likely source. Lettuce was the bad guy again less than a month later, when another *E. coli* outbreak made 81 people sick after eating at Taco John's restaurants in Iowa, Minnesota and Wisconsin.

What was going on? Was it terrorism? Was our food supply in danger? Sales of leafy greens plummeted, restaurants stopped serving spinach, even if it was cooked, and salad bars were about as popular as cod liver oil. No one missed the irony that Americans, not known for eating a lot of

healthy veggies to begin with, were eating even less. Calls for food safety reform escalated from consumers and the industry, and the nonpartisan Government Accountability Office added food safety to its list of critically flawed federal programs. Everyone began to wonder if our food supply was safe enough.

Americans have the most abundant and affordable food supply in the world, and many experts say it's the safest, with the most advanced inspection and surveillance systems. "The early detection of the recent outbreaks and the response by government and the food industry definitely minimized the problem and the number of cases," says James Marsden, PhD, a Regents distinguished professor who conducts research on food safety and security at Kansas State University.

In fact, unprecedented advances in technology are improving our ability to prevent, detect and contain food-borne illnesses. And the stakes have never been greater. American consumers have come to expect year-round variety and convenience but are unwilling to compromise on safety. And faced with economic losses and threats of litigation, many growers and manufacturers are committed to improving safety practices, even if it means higher costs and more government controls.

"Computerization, automation and rapid analysis have driven all kinds of change in the food industry," says Richard Rothamel, vice president of product innovation and development

at San Francisco-based Del Monte Foods. Computers are already being used to control and track cooking times and temperatures, and sanitize equipment. "We have taken the human error out of things that were done manually 10 or 20 years ago," he says.

Here, some of the innovations already in place or coming soon.

## Auto-Detection

Experts agree that an important part of preventing outbreaks is identifying contaminated products before they get to market. To do that, microbiologists test foods by looking for pathogens directly or for indicator organisms, which signal potential problems in the way foods are grown, produced or processed.

Launching in the United States this summer, the Tempo system from bioMérieux automatically counts bacteria and other markers to assess whether food is safe or not. Depending on the food, quality indicator testing can occur at various points along the production chain. For example, in the case of spinach, which is minimally handled until it is washed, dried and packaged, testing takes place after packaging; in the case of raw poultry or meats, it typically takes place after processing.

"No food is sterile unless it is cooked. Anything raw—meat, poultry or produce—will have some bacteria, which is to be expected, and doesn't necessarily mean the food is unsafe," says Stan Bailey, PhD, a microbiologist with the Agricultural



AMERICANS WHO  
EAT HOMEMADE  
COOKIE DOUGH,  
OFTEN CONTAINING  
RAW EGGS:  
**40%**

Research Service, a division of the USDA. "Scientists need to be able to determine if the level of bacteria on the food is amiss," says Bailey, who worked with bioMérieux to evaluate the new system.

Using wireless technology linked to a database management system, Tempo standardizes and automates a formerly cumbersome procedure, resulting in enormous savings in laboratory space and technical staff time.

## Better Way to Wash

We wash produce before eating it; some of us even use one of the new fruit and vegetable "detergents." But are we just rinsing off soil, leaving germs and bacteria behind?

Conventional washing techniques do go a long way toward removing

MEAT RECALLS  
IN 2006:  
**31**  
12 OF THOSE WERE  
LINKED TO *E. COLI*  
OR *LISTERIA*







THOSE WHO GOT  
SICK FROM  
RASPBERRIES:  
**1,800**  
IN 2 CYCLOSPORA  
OUTBREAKS

bugs—they are 90 to 99 percent effective. But raw fruits and vegetables can have punctures that breed bacteria. Clumps of microorganisms on the surface of raw produce, called a biofilm, can be difficult to wash away. So scientists are investigating the use of ozonated water and other disinfection methods to raise the bar of safety.

Chlorine was the chemical most commonly used by processors to eliminate germs from fresh produce. Then in 2001, the FDA approved the use of ozone, previously used to treat municipal water supplies, as a surface sanitizer and food disinfectant. The colorless gas is produced commercially by passing electricity through oxygen. Without heat or chemicals, it kills bacteria, viruses and molds on foods like produce, poultry and meats. It is also environmentally friendly, says

Michael Elliot, president of Eco-Safe Systems USA, a developer of ozone disinfection systems. After 20 to 30 minutes, it decomposes into oxygen without leaving any residue, meeting organic food standards.

While ozone is a faster, safer and more effective disinfectant than chlorine, most scientists agree that no single disinfectant can guarantee pathogen-free food. At the University of Illinois at Urbana-Champaign, Scott Martin, PhD, a professor of food microbiology, and Hao Feng, PhD, an assistant professor of food engineering, have used a combination of ozone and ultrasound, which quickly and completely eliminated listeria biofilm on stainless chips that mimic a food processing surface.

## DNA Sleuthing

With our global economy, we can purchase almost any fresh or processed food regardless of the season. It's not unusual to find tomatoes from Israel, bananas from Ecuador and grapes from Chile. But about ten years ago, the safety of imports was called into question when raspberries from Guatemala were tainted with cyclospora, a parasite that sickened about 1,800 people in the United States and Canada in two separate outbreaks. To avoid similar incidents, the federal government, along with state and local partners, developed a new rapid pathogen detection technique.

It relies on the same technology used by criminologists on crime shows like *CSI* to capture the DNA in

blood and link it to specific individuals. In collaboration with the FDA, the process was refined for use in food testing. When produce enters the country—via ship, truck, rail or air—samples are immediately taken to a nearby field office, where a technician washes the food in a buffered isotonic solution. After screening out large particles that might interfere with testing, the technician applies small amounts of the wash to a chemically coated, index-size card to detect the presence of microscopic parasites, says Betsy Moran, PhD, a biologist with Whatman, the global company that patented the filter.

The card captures a pathogen's DNA for analysis and can be stored at room temperature for up to 14 years without the loss of DNA quality. Another advantage: If a new molecular DNA test comes along, experts can go back and reanalyze the archived samples.

## Germ-Fighter Film

Everyone knows that M&M's melt in your mouth, not in your hands. That's because the chocolate is encased in a sugary (and tasty) protective coating. A similar concept could help keep food safe. Edible film with bacteria-killing properties has been in the pipeline for years, but it was never embraced by the industry, because consumers didn't want additives wrapping their fresh foods. Now a team of researchers from the USDA and the University of Lleida in Spain, led by Tara H. McHugh, PhD, a food chemist with the USDA, are looking at

how plant-derived substances with natural antibacterial properties, such as oregano, cinnamon and lemon grass oil, can improve the safety of fresh-cut produce and other foods.

These coatings haven't been tested outside the lab, but studies so far show that small concentrations of oregano oil mixed with a solution of apple puree can kill 50 percent of *E. coli* bacteria in three minutes. Researchers are now studying whether the highly concentrated mixture can last longer than produce washes. If perfected for commercial applications, antimicrobial edible coatings not only would kill deadly bacteria but also could add antioxidants and flavor. They could be applied to fresh-

## Say Cheese

As a matter of taste, few cheese aficionados would opt for processed products over the artisanal varieties that are often handcrafted and aged in homes or on small farms. But over the years, a spate of listeria outbreaks have been linked to soft cheeses (such as Brie, Camembert and queso-fresco style) that are often made from raw milk.

Listeria generally causes flu-like symptoms but can lead to more serious illnesses such as meningitis or septicemia, or miscarriage in pregnant women. As many as 500 people die from the bacteria each year. To be safe, especially if you're in a vulnerable group, make sure your cheese is made from pasteurized milk.



cut fruits and vegetables as well as meat products, or might be used as dressings for salads.

## Video Surveillance

Few people have forgotten the 1993 Jack in the Box outbreak of *E. coli* that affected 700 people who ate improperly cooked burgers in Washington, California, Idaho and Nevada, and led to the deaths of four children. In 2002, a listeria outbreak that sickened 50

and killed eight was linked to two poultry companies and prompted recalls of more than 30 million pounds of deli products. So let's talk turkey.

The 150,000-square-foot Dakota Provisions turkey plant, on 114 acres in rural Huron, South Dakota, processes about 16,000 birds a day. The company produces ready-to-eat meats and poultry sold by large food service companies, specialty retailers like Trader Joe's and neighborhood delis.

In a meat processing plant like this, a single contaminant or inadvertent safety lapse can compromise an entire inventory. Because it's so hard for managers to keep an eye on everything 24/7, the company uses remote video auditing services provided by Arrowsight of Mount Kisco, New York. There are 43 fixed-view and seven pan-tilt zoom remote video cameras strategically placed in the plant, preset to provide 448 different views.

Have you ever used TiVo to record shows you didn't want to miss? A similar search-and-retrieval technology allows Arrowsight auditors to sample live and archived videos to make sure procedures have been followed. "I can view the videos from any location where I have Internet access," says Dakota Provisions president and CEO Kenneth Rutledge. He receives daily compliance scorecards and video hyperlinks that are used to coach staff to improve performance. "The cameras also ensure that animals are treated humanely every day," says Adam Aronson, CEO of Arrowsight. The benefits to the consumer: en-

hanced protection against contamination, sabotage or bioterrorism.

## Safer Eggs

A survey of 1,000 Americans found that 40 percent admit to eating cookie dough straight from the mixing bowl. While the odds of contracting a salmonella enteritidis infection from raw eggs are small—less than one in 10,000—why tempt your luck? The results can be deadly, especially if you're in a susceptible group: seniors, infants and children, pregnant women, diabetics or anyone with a compromised immune system.

In 30 states, Davidson's Safest Choice Pasteurized Shell Eggs are on the dairy shelves of local groceries; elsewhere, they can be ordered online ([safeeggs.com](http://safeeggs.com)). "People know not to eat their chicken until it is fully cooked," says Greg West, president of the Lansing, Illinois, company that produces the eggs. "But they often don't know the risks of over easy eggs for breakfast," which is akin to eating medium-rare chicken.

The company pasteurizes about 100 million eggs a year by immersing them into a giant "Jacuzzi." The hourlong process is computerized so the timing and temperature of the water bath kills all bacteria or viruses that may have been passed on by a contaminated hen. All this is done without breaking the yoke, cooking the product or changing its taste or consistency. When the eggs come out, they're coated with food-grade wax so no environmental contaminants can enter. Then they're

dried and stamped with the letter "P" in a red circle before they're packed to ship. If avian flu were ever to enter the poultry supply, the process assures that eggs from infected chickens would be virus-free.

The eggs have been used to make Caesar salad dressing in restaurants and are used at several major hotels. Depending on the season, the eggs can cost 50 percent more than conventional ones but have a longer shelf life.

## Don't Fear Our Food

"Many years ago, there was no mechanism in government to efficiently monitor outbreaks, so they often went unrecognized. Now the CDC can connect all the dots," says Rothamel of Del Monte.

"It's all about technology," says Marsden. "Now we need to make sure that systems are universally applied."

Contamination can take place anywhere along the food chain. So more research is needed to identify the pathways microbes follow from the farm to the fork. While science and technology are reducing risks, there's still no substitute for common sense in the supermarket, in the restaurant and in the kitchen, along with consumer advocacy to make safe and nutritious foods a national priority.

"It's crucial that we don't live in fear of our food supply," says Bailey. "The majority of food-borne illnesses would be prevented if consumers handled and cooked food properly."

**rd.com** For more advances, and tips on how to keep your food safe, go to [rd.com/safefood](http://rd.com/safefood).

## Is Irradiating Safe?

Food irradiation, first approved in this country in 1963, is a form of pasteurization that exposes certain foods to radiant energy, including gamma rays, electron beams and x-rays, to reduce harmful bacteria and parasites. It's most often used to treat meat and poultry. U.S. rules also allow irradiation of wheat, potatoes, some seasonings, eggs and produce. Labels must be marked. Endorsed by the World Health Organization, the technology is used in about 40 countries.

According to James Marsden, PhD, of Kansas State University, the food industry has been slow to adopt irradiation because of consumer resistance, the cost of equipment and increased availability of effective alternatives. Many green groups worry that high-energy radiation has potentially harmful side effects. The recent produce outbreaks prompted renewed discussion of the pros, cons and costs of irradiation.