

Food Industry Looks To RFID To Avoid Next Catastrophe

Technology still needs to come down in price to be effective in tracking down contaminated food

By Mary Hayes Weier, [InformationWeek](#)

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For two weeks last September, fresh spinach disappeared from grocery store shelves. The Food and Drug Administration recalled all spinach after *E. coli*-tainted leaves sickened hundreds of people.

Using the bar code on a bag of bad spinach, investigators traced its origin to California's Salinas Valley. Then began a painstaking [search](#) for the grower, all the while spinach was being pulled from grocery stores, distribution plants, and [processing](#) plants and destroyed. A growers' organization estimates the recall cost the spinach industry as much as \$74 million.



RFID helps the meat industry figure out where the beef is

Photo by Mike Cassese/Reuters

It would have been much faster to track the contaminated leaves to the grower if spinach bags and containers had carried radio frequency identification tags with complete histories of the contents' origins. RFID tags can hold considerably more data than bar codes and are more easily read because they don't require a line-of-sight connection to a bar-code reader. So what's the holdup? Silicon [RFID](#) chips still cost too much. To use them for item-level tagging, they would have to cost less than 1 cent, and considering the required components--an antenna and a microchip--that may never happen.

Get rid of the silicon and RFID could work for the food industry. Fortunately, several companies are developing silicon-free alternatives. PolyIC, half-owned by Siemens, is working on RFID tags made by printing electrically conducting and semiconducting polymers on polymer film. PolyIC recently announced that it has developed a printing process that lets it produce miles of the plastic tags, and it plans to produce 13.56-MHz high-frequency RFID tags this year.

OrganicID, recently acquired by Weyerhaeuser, has invented an RFID [tag](#) based on paper, creating circuits through the layering of electronic ink that costs less than a cent. Weyerhaeuser plans to market the tags to the consumer goods and retail industries.

Somark Innovations has developed a nontoxic RFID ink it says can be stamped onto meat. Somark will market its product to the cattle industry, which is being asked to comply with the Department of Agriculture's National Animal Identification System. The agency began working on the national ID system after a cow infected with mad cow disease was found in the United States in 2003. The system, which is expected to be in place in two years, will provide every newborn calf with a 15-digit identification number and will include [databases](#) managed by states and industry groups.

The food industry has experience with RFID. Some manufacturers are working to comply with Wal-Mart Stores' pallet-level tagging requirement, for example. And some processors, such as Atlantic Beef Products, are trying new tracking methods. The Ontario beef-processing facility is using RFID to record data on cow carcasses and the resulting cuts of meat as they travel through its processing plant and on to distributors (see story, below).

Item-level RFID tagging has the potential to increase food safety and cut costs in the food supply chain by improving stock management, expanding theft controls, and expediting the retail checkout process. Concerns are rising over food tainted in the supply chain because of sloppy processing practices, and the Department of Homeland Security considers bioterrorism to be among the biggest threats facing the country.

IN DENIAL

Still, the food industry continues to rely on a bar-coding system that, because of limitations in readability and data storage, provides very little information on where food came from. "To some extent, America is in denial about food safety," says Peter Harrop, chairman of IDTechEx, an RFID research firm. Printed RFID tags, whether on plastic or paper, hold the most promise, Harrop says.

RFID will be on the agenda later this month at the Food Industry Congress in Florida, attended by every big manufacturer. Industry and government officials are discussing the possibility of tagging cases of leafy green vegetables with RFID tags to prevent a repeat of the spinach recall.

Change happens slowly in this industry and has often been in response to a major catastrophe. In 1993, hundreds of people were sickened and four children died after eating hamburgers that hadn't been fully cooked at Jack in the Box restaurants. "It went from a mistake by a \$4-an-hour employee to a highly regulated process," says Craig Nelson, founder and CTO of Vigilistics Software, which provides food-tracing technology. "Now charts and records have to be kept in every restaurant to make sure that never happens again."

Change in fruit-juice processing came after unpasteurized

Odwalla apple juice containing *E. coli* caused kidney failure in several children in 1996. "Fruit juice was self-regulated until Odwalla. Within weeks, that became a highly regulated industry," says Nelson, who has worked as a consultant to the FDA for almost 15 years, instructing officers on various issues surrounding regulations, manufacturing, and food-industry technologies.

One danger that RFID could help with, Nelson says, is the possibility of a common food ingredient, such as a stabilizer or taste enhancer, getting contaminated at the site of its origin with a substance such as anthrax and then distributed. It could be mixed with a few ingredients at one food plant, sent to another and mixed with more ingredients, and end up at the final manufacturer, where boxes of cake mix or macaroni and cheese are produced. Consider that many processed foods have a shelf life of a few years or more, making it even more difficult to find every contaminated box.

RFID tags could trace the history of every ingredient in a package of food, and RFID readers could scan those tags quickly, getting data into investigators' hands much faster. That capability alone could prevent widespread illness and save lives next time contaminated food ends up on consumers' dinner tables.

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