Behind the organic label

As the industry grows, skeptics are challenging the health claims.

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These are good times for those who grow and sell organic foods. But there may be trouble in paradise.

Prompted by a quest for safer, healthier diets and a cleaner environment, more American consumers are buying the bountiful harvests of organic farmers. Last year, U.S. spending on organic foods reached close to $10.4 billion, making this the fastest-growing segment of the American food industry. Amid scares over mad cow disease, mercury in fish and produce tainted with harmful bacteria, new customers are joining existing ones in embracing organic foods as a sanctuary from harm and a surer route to long life and good health.

But as organic products — and their claims to superiority — have grown more common, scientists, policy analysts and some consumers have begun to ask for proof. Where's the evidence, they ask, for the widespread belief that organic foods are safer and more nutritious than those raised by conventional farming methods?

The short answer, food safety and nutrition scientists say, is that such proof does not exist. Indeed, by one well-established measure of healthfulness — contamination with fecal matter and potentially harmful bacteria — some organic foods may pose greater risks to consumers.

As food fights go, this one might not be as raucous as the cacophony over low-carb diets or reshaping the food pyramid — yet. But since 1989, when organic-food activists raised a nationwide scare over the pesticide alar in apples, many scientists have seethed quietly at what they perceive as a campaign of scare tactics, innuendo and shoddy science perpetrated by organic food producers and their allies.

Now, many of those experts, who had been content to pursue their research in academic anonymity, are being called to testify before congressional committees and weigh in on a swirling public debate about America's diet. As they begin to find their voice, the organic food industry may find them about as welcome as a plague of aphids. And it will take more than cow manure and dried chrysanthemum leaves to make them go away.

Dr. Joseph D. Rosen, a Rutgers University food science professor on the cusp of retirement, is one of the organic food industry's newest pests. For years, Rosen said, he kept his head down, conducting and publishing narrow research on how to measure pesticide residues in food. But he was moved to begin speaking out in 2002, when Consumer Reports inveighed against proposals to irradiate meat — a measure Rosen believes could prevent more then 350 deaths per year due to food-borne illnesses.

Last month, at the American Chemical Society's annual meeting in Philadelphia, Rosen presided over a daylong symposium that asked the question: Is organic food healthier than conventional food?

"There's certainly not sufficient science to prove that the claims of organic food advocates are true," he said.

The symposium was the second this year to question the benefits of organic food. In March, the First World Congress on Organic Food convened scientists, farmers and consumer analysts to consider the safety and nutritional aspects of organic food. It too found a dearth of evidence to support claims of superiority.

"We don't have a huge wealth of literature here," said Dr. Ewen C.D. Todd, director of Michigan State University's

National Food Safety and Toxicology Center, which hosted the gathering. "It's going to be difficult to say science has spoken," he added.

"This really, truly is a coming of age for the organic movement," said Alex Avery, director of research and education at the Hudson Institute's Center for Global Food Issues and a vocal critic of the organic food industry. "They have been legitimized to the point where they're no longer the kooky fringe, and they're now subject to the same intense, microscopic scrutiny that conventional farming has been. This is a mark of their success."

Those meeting under the banner of the American Chemical Society's agrochemical group — chemists, toxicologists, microbiologists and risk analysts — were admitted skeptics to begin with. As lone voices, many have spoken out before. But for what may be the first time, they are raising their voices together.

These critics picked apart studies and reports posted on websites, cited in the media and touted in organic marketing that suggest organic food is a safer and more nutritious choice. They presented data collected by the federal government, studies published in respected journals of food safety and nutrition and, in some cases, results from their own labs to show that differences are, at best, tiny and probably meaningless.

And they traced the growing tentacles of a onetime counterculture movement that has begun to look and act more like an industry dedicated to expanding its market and increasing its influence on controversial issues of food safety and supply, such as bioengineered crops and irradiation of food.

In the process, the skeptics called into question one rationale that drives buyers of organic food. By one recent survey, two-in-three consumers of organic food make their choice believing it will support "better health."

"Right now, the organic movement is fairly strong because it's generally recognized that these products are safer and more nutritious," said Christine Bruhn, director of the University of California's Center for Consumer Research at UC Davis.

But, Bruhn said, the organic business may be in trouble if consumers come to believe that the products are not necessarily healthier for them. "It's a market philosophy that's built on a house of cards. You blow those cards and there might be some tumbling," said Bruhn.

That is especially true because the price tags of organically grown foods are typically higher than those of their conventional counterparts. With some produce — carrots, for example — the difference can be a matter of pennies. But for many products — such as peaches, eggs and dairy — the organic label can add considerably to the bill, sometimes doubling the price.

Sherry Petrie is one consumer who might reach less often for organic products if she fails to get some proof soon.

A 37-year-old mother of five in Inglewood, Petrie calls herself "very health-conscious," and frequently "splurges" to buy organic vegetables, fruits, milk and eggs for her family. She worries about pesticides on produce, fears that hormones fed to dairy cows might be causing girls to race to puberty, and worries about food additives that may add nothing but risk. But she also worries about her family's budget, "and when you have a family as big as mine, you kind of have to pick and choose."

While Petrie often buys organic, "I do question at times" whether the organic label adds anything but cost, she said. In Ralphs, where she usually shops, Petrie finds herself torn between her commitment to buying the healthiest food and the price premiums of many organic products. "I'm asking myself, 'Is it really worth it?' " Petrie said.

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Benefits under study

The message of organic food's newly outspoken skeptics may discomfort consumers who have been paying premiums for produce and meat raised without synthetic pesticides, fertilizers and antibiotics and without growth hormones. Buy it if you like it, they say, but not because it's better for you.

The group's message to those who raise, sell and promote organic products is a bit less friendly: You are being watched.

That message comes at a time when the organic food industry is stepping up its bid to convince scientific and medical professionals of the health benefits of organic food, a move that will inevitably open their claims to more rigorous scrutiny.

Last year, the Organic Trade Assn., which represents more than 1,450 producers, processors, distributors and retailers of organic products, launched the Organic Center for Education and Promotion. The center is dedicated to providing "consumers, healthcare professionals, educators, public officials and government agencies with credible, scientific information about the organic benefit."

Katherine DiMatteo, acting director of the Organic Center, acknowledged that organic food proponents have just begun to build their scientific case, adding, "it is a long road ahead."

She said many consumers had developed the belief that organic food is safer and healthier for reasons that are "nonscientific." When the public becomes agitated by some new "food scare" — over pesticides, mad cow disease, antibiotic resistance — they frequently learn that organic farmers have taken steps that avoid such pitfalls, she said. That, she noted, positions organic food in their minds as a safer and healthier alternative to conventionally grown foods, even when research is not there to support that presumption. "It's got a lot to do with these food scares," DiMatteo said.

But DiMatteo said that those who produce, process and sell organic foods know that most American consumers — organic food represents only 2% of all U.S. food sales — have yet to be convinced. And even some of their regular customers want to see more and better research findings. That, she added, is why the Organic Center for Education and Promotion was born.

"We're still in a growth phase in building organic, but we also see that part of our base wants to know more about the health benefits and they're waiting for more proof," she said.

Rutgers' Rosen said that consumers who spend more for organically raised foods in the belief that they have more vitamins or fewer pesticide residues and fewer contaminants should understand a few things about the studies that have helped lead them to that belief.

First, he said, most were not designed, conducted or published according to accepted scientific standards, and many were done by groups that openly promote organic foods. One of the most-cited — widely used as evidence of organic food's higher vitamin content — was published in 1948 by Firman Bear, a long-retired Rutgers food scientist who has since acknowledged his study was not designed to assess organic crops nor to compare nutritional values.

Beyond that, well-designed studies that have found differences in organic food — say, in vitamin C content or in pesticide residues — have found differences so small that most scientists say they are not meaningful.

Ruth Kava, director of nutrition at the New York-based American Council on Science and Health, has combed through most of the studies cited in support of the belief that organic produce is more nutritious. At least half of those studies, Kava said, suffer from crippling inconsistencies in how the produce samples were gathered, analyzed and compared. And even where vitamin differences appear to be well-documented, Kava said, they are so tiny as to be insignificant.

Looking at one comparison of vitamin C in a market basket of organic and conventionally grown vegetables, Kava acknowledged a slight edge for the organic crops. But it amounted to a difference of around 10% of the recommended daily intake requirement for vitamin C. For most adults, she said, "I'm not sure it matters," and their consumption of fruits could easily make up the difference.

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Residue risks weighed

Differences in pesticide residues are the subject of much fiercer debate.

Synthetically produced fertilizers, pesticides and herbicides used by conventional farmers are subject to extensive regulation. The federal government and, often, states (California is included) have set strict limits on what types and amounts they will allow on fruits and vegetables making their way to market. In most cases, those limits are based on analyses aimed at protecting the most vulnerable or voracious consumers of fruits and vegetables.

Supporters of organic agriculture maintain that synthetic pesticides — even when consumed in tiny doses — accumulate in the body over a lifetime, and may interact with one another in unpredictable ways.

Cumulative pesticide risks are not well understood, these advocates say, and until they are, fewer pesticide residues means less risk. This is especially true, they argue, for infants and children who take in a greater proportion of fruits and vegetables based on their size and who have more fragile immune systems than adults.

"The argument is that less is better than more, even though more may be minuscule," said Todd of Michigan State University. "You can say you've got a better safety margin, even though many other things may overwhelm that."

Advocates of organic agriculture often fail to note that organic farmers also use potentially risky herbicides, pesticides and fertilizers. But the natural compounds that government regulations allow organic farmers to use, including manure, sulfur, copper, pyrethrum (an insecticide made of dried African chrysanthemums), and rotenone (an insecticide derived from the roots of tropical plants that is highly toxic to fish), are not tracked and limited by government regulators, said Christine Chaisson, a risk-analysis specialist with the LifeLine Group, a not-for-profit corporation that develops methods to analyze risk. That, she said, makes it difficult to conclude that organic food poses less risk to consumers than its conventionally grown counterparts.

Last June, the Organic Center released a study, based on data collected by the U.S. Department of Agriculture, that found conventionally grown fruits and vegetables were eight times more likely to contain pesticide residues than organically raised crops. But Michael F. Hare, a toxicologist with the Texas Department of Agriculture who reviewed the report for the American Chemical Society's panel, found that, of the fewer than 20% of conventionally grown samples in which a pesticide residue was found, the amount usually fell between 1% and 5% of the limits considered safe by federal government standards. Although organic crops were less likely to show pesticide residues, Hare said at these low levels, neither crop could be declared meaningfully safer than the other.

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Contamination question

The belief that organic foods are healthier is most vulnerable when it comes to food contamination issues, scientists have said.

In a year when the federal government has issued contamination warnings for dozens of crops, the safety of organic produce is coming under more intense scrutiny. When it comes to fruits and vegetables, organics have one key vulnerability, which is organic farmers' far heavier reliance on cow and pig manure as a source of fertilizer. And where you have animal manure, particularly if it has not been carefully aged and processed, the risk of contamination by dangerous *E. coli*, salmonella and citrobacter bacteria is greatly increased.

The Organic Trade Assn. notes that the U.S. Department of Agriculture has set strict standards for organic farmers' use of animal manure. But many farmers who market their products as natural or organic may not always adhere to them, and the safety standards remain a topic of debate among toxicologists. In recent years, at least two outbreaks of *E. coli* contamination — in strawberries and lettuce — have been associated with organic foods, and alfalfa sprouts marketed in natural foods stores were recalled for salmonella contamination.

In a study published in May in the Journal of Food Protection, University of Minnesota professor Francisco Diez-

Gonzalez reported that in a comparison of organic and conventionally raised crops plucked directly from the fields, organic vegetables were more than five times likelier to show fecal contamination — an indicator that produce could harbor harmful pathogens — than were those grown conventionally.

Scientists in Philadelphia last month also took aim at organic poultry, where flocks are often allowed to roam, as an organic product whose contamination rates are higher than those among conventionally grown flocks. Because some flocks raised as organic poultry are exposed to wild birds and their droppings, several studies have found higher rates of potentially harmful bacterial contamination among such birds than among conventionally raised poultry.

In the end, the organic versus conventional contest may have to be settled by consumers' tastes, their budgets, and their commitment to environmental principles. From a health perspective, said Bruhn of UC Davis , it's a contest that pits one set of safe products against another. But it is also, she added, a marketing imbroglio that befuddles consumers and can fill those who cannot afford organic food's premiums with guilt.

"The critical thing is getting good fruits and vegetables and dairy products into the mouths of consumers. People need to use their funds to buy the healthy products their family likes," Bruhn said. In the meantime, she added, let the comparisons — and with them, a new scientific debate — begin. "I look forward to seeing the evidence."