

## **Contra Costa Times**

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# **Novazone at fore of food sanitation**

## **Livermore company uses ozone to remove particles from fruits, vegetables and water**

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In the emerging field of clean technologies, alternative energy has by far received the most attention. High-profile documentaries, well-funded campaigns and widely publicized innovations all have marked the development of the sector.

That hype is now spreading into food and water safety, and a local company is at the forefront of that technology.

Novazone, based in Livermore, manufactures equipment that uses ozone to sanitize food, particularly fruits and vegetables, and water. When released into a controlled atmosphere or dissolved in water, ozone, a highly unstable compound made entirely of oxygen atoms, oxidizes -- in effect, chemically burns -- disease- and decay-causing particles. It leaves no residue, and any unused ozone quickly transforms into pure molecular oxygen.

The technology lends itself to the food industry's biggest challenge: providing clean and safe food without the use of chemicals. The ozone process is one among a handful of answers.

Competing technologies exist, including the use of silver ions, irradiation or a so-called cold plasma, UC Davis plant pathologist Trevor Suslow said.

Ozone treatment "is a tool in the toolbox," he said. "It can be used effectively, although its reactivity presents some real downsides."

The trio of oxygen atoms is so reactive that it will oxidize anything it touches and dissipate very quickly, Suslow said. That means it doesn't stay around long, and the proper concentration is difficult to maintain. It also requires a relatively hefty up-front investment, which disqualifies it from use on small farms.

As the technology becomes better, and the application is refined, ozone and other clean-food technologies might become more readily available, he acknowledged. But even as the market grows, pegging food safety to any one solution is probably going to be a mistake.

"All alternatives have a potential role," Suslow said. "There's no magic bullet that I'm aware of."

A group of veteran Silicon Valley entrepreneurs identified Novazone as a treasure trove of potential. Two years ago, they bought it out. Since then, they have raised millions of dollars in venture capital, riding on the coattails of a clean-energy boom.

"I've been in this industry for 27 years," said Dave Cope, Novazone's chief executive. "I was there when the Internet was new, but this shift, the market disruption, the demand is unlike anything I've ever seen before."

However, to a lesser extent, food safety also has enjoyed a recognition boost after recent outbreaks of E. coli and salmonella. Meanwhile, the rapid growth of organic food continues to underscore consumers' distaste for chemicals.

"We didn't purchase the ozone system to become organic," said Tim LaDouceur, production manager of the Oregon-based cherry grower Orchard View Farms, which installed the Novazone machinery in 2004. "It's just the right thing to do."

Beyond the moral implications, companies that use Novazone's technology also expect profit. Brooklyn-based Lucky's Real Tomatoes, for instance, installed ozone units to protect its vine-ripened tomatoes while they are prepared for shipping to 400 restaurants.

"Novazone helps us deal with any contamination," said company chief executive Robert Marcelli. "As a side effect, ozone keeps the tomato stable as well. It eats ethylene, which slows the ripening process."

By reducing the loss of produce to rot and damage, Lucky's Real Tomatoes should make back the \$200,000 that it cost to buy and install the systems, Marcelli said.

"A fresh tomato is like a fuse," he said. "The moment you pick it, it's lit. We call it the tomato bomb."

Novazone is working on a truck unit, he added, which will help the tomatoes avoid contamination en route to the customers. That, Marcelli added, would be protection "truly from field to fork."

Ambitious on a global scale, Novazone has targeted the worldwide food supply chain, Cope said.

"If I have a box of apples in Chile that I want to send to Europe, my investment is unprotected once I ship it," Cope said. "We're going to provide a solution all the way down the supply chain to the consumer. Imagine how large the market becomes then."

Already, Novazone has 280 customers in 16 countries. Although the company grosses less than \$10 million now, its revenues have tripled in each of the past few years, a trend Cope expects to continue.

The room for growth is also vast. In the developed world, consumers demand clean food, and in the developing world, especially Asia, a newly emerging middle class provides a potential market of hundreds of millions of people.

"When the market is looking for a clean alternative for anything to do with food and water -- and in the future, air, by the way -- they can come to us," Cope said.

Through his long contact list in Silicon Valley, Cope had little trouble finding venture capital to finance early growth. Foundation Capital, which financed other ventures by Cope in the past and pursues clean tech investments now, poured millions into the company in two rounds of financing so far. The last round, in December, yielded \$7 million.

"This is a great big opportunity," said Foundation partner Warren Weiss. "Our strategy around clean tech allows us to go into new markets, and food here is a new angle. We could grow a large independent company in this space."

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## **INVESTMENT**