

Ozone technology may keep foods fresher, longer

Food preservation company Purfresh uses ozone to address global food shortages, tackle salmonella outbreaks, and lengthen organics' shelf life

By Dan Fost



Photo courtesy of Purfresh

One company—Purfresh, a firm based in Fremont, California—thinks it has found such a solution in ozone. Ozone is a key ingredient in urban smog and forms an atmospheric layer whose depletion is hastening climate change. It's also a gas with many industrial uses, including as a potent antibacterial. Just a tiny spritz of ozone in water can kill E coli and salmonella bacteria more effectively than chlorine and without any significant residual effects. It can also keep produce fresher longer.

"If you could use enough chlorine, you could guarantee no E coli on spinach," says David Cope, president and CEO of Purfresh, whose "clean chemistry," he adds, doesn't compromise organically grown produce. Today the company is working on food preservation with such titans as Dole, Chiquita, Pepsi, and Procter & Gamble, but Purfresh was founded in 1996 as Novazone, one of more than 200 companies in the ozonation industry. Its machines generate ozone, which many businesses use to clean water—for an aquarium, for instance, or in the manufacturing of a beauty product. Purfresh hired Cope, a former tech-firm executive, as its chief marketing officer in 2004, and made him CEO in 2006. He helped steer the company in a new direction based on the realization that Purfresh's

products were already safe enough for human consumption, so why not use them on food and address even bigger problems?

As scientists tackled that question, Purfresh branched out its product line. One set of ozone generators cleans up water already used to irrigate crops and helps purify water for bottling, while other generators are used for cold storage and water disinfection for fresh produce. A Purfresh "sunscreen" called Purshade protects fruits and vegetables in the field so they require less water. Another product helps keep food fresh during shipping by making ozone that is blended into water and sprayed on goods.

Michael Doyle, director of the Center for Food Safety at the University of Georgia, says he has seen promising data that ozone can kill bacteria in water. Nevertheless, he says, it's still a work in progress, and chlorine remains the gold standard even though it can leave a residue on food, give it a bad taste, or spur reactions that create carcinogens. Ozone doesn't carry any of that baggage, Doyle believes, but it can be dangerous for workers to handle. (Doyle's center receives some funding from Purfresh, but he says the money comes without strings attached.)

Diamond Fruit Growers of Oregon's Hood River Valley, the largest pear supplier in the US, says Purfresh products have cut its chemical and water expenses by 30 percent, and prevented the spoilage of millions of dollars' worth of fruit. Test results indicate that Purfresh helps store pears two months longer than previously thought possible, and vine-ripened tomatoes that had a five-day shelf life can now last 20 days.

Purfresh completed a \$25 million round of Series C funding earlier this year that should help the company expand beyond its current base of approximately 320 clients across 22 countries. Greater success in the future could allow residents of developed northern-hemisphere countries to savor equatorial fruits with less guilt. More important, it could help people dependent on international aid for their daily bread. "Look at the growing population around the globe," says Paul Hall, president of AIV Microbiology and Food Safety Consultants of Illinois, and a member of Purfresh's board of directors. "We're losing 20 million acres of farmland a year due to urbanization. With less land to grow food on, the pressures will be greater. Technologies like those that Purfresh has will play a big role in the future."