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Chemical-Free Process Approved for Pasteurizing CA Almonds

By Cathy Siegner | September 8, 2015

A technical review panel of the Almond Board of California has given its seal of approval to another chemical-free process for pasteurizing almonds. The technology being marketed by RF Biocidics of Sacramento uses radio frequency waves to zap pathogens, insects, and mold on almonds and other foods instead of using chemicals or steam.

The process does not alter the taste or nutrient content, according to the company. The patented food safety process was developed at the University of California, Davis.

“I can tell you within the industry, this was a very important milestone. not only for our company but really for the industry,” said RF Biocidics CEO Craig Powell. “Our process is non-chemical, and that’s a huge breakthrough.”



Almonds ripening on the tree.

Following *Salmonella* outbreaks in 2001 and 2004, nearly all almonds marketed in the United States must be pasteurized, regardless of whether they’re conventionally or organically grown. The chemical process uses propylene oxide (PPO), which can’t be used on organic almonds.

Steam processes are used for blanching as well as pasteurizing almonds, explained Tim Birmingham, director of quality assurance and industry services for the Almond Board in Modesto. An infrared heat process has also been developed in recent years.

He told **Food Safety News** that new and improved pasteurization technologies are welcome in the almond

industry, which has mainly been focused on fighting *Salmonella*, although other pathogens, such as *Listeria* and *E. coli*, occasionally crop up.

“We have nine years of survey data from almonds in the orchard. We find *Salmonella*, but it’s there in a little less, or a little more, than 1 percent of samples,” Birmingham said, adding, “Our processes are more than effective for *Listeria* and *E. coli*. If you did find [*E. coli*], it would most likely be a plant issue.”

Here are the pasteurization techniques the Almond Board and the U.S. Food and Drug Administration have previously approved. The board notes that not only do these methods reduce the potential for contamination, but they also maintain the product’s “taste and crunch”:

Oil roasting, dry roasting and blanching. These traditional processes have been shown to provide the required reduction in the level of potential contamination.



Almond trees in bloom.

Steam



Bees are brought in to pollinate the almond crop.

processing. A short burst of steam treats the surface of the nutmeat only. This process meets USDA National Organic Program standards, and does not diminish the nutritional value and sensory attributes of almonds.

Propylene oxide (PPO). This is a surface treatment that rapidly dissipates after treatment. It is very effective at reducing potential contamination, and does not alter the nutritional and sensory characteristics of almonds.

Small growers in California who sell their almonds directly to consumers in small batches are exempt from the pasteurization requirement.

The pasteurization equipment RF Biocidics has developed costs at least \$1 million or more and is reportedly being tested at the Ready Roast Nut Company in Madera, CA, with a newer-generation machine in operation at Sran Family Orchards in Kerman, CA, near Fresno.

Birmingham said such machines are large, have a lot of technology, and have to process a lot of product (2-3,000 pounds of almonds per hour, or even more).

“They’re not cheap investments, but another outbreak could really devastate this industry,” he noted. “With [Food Safety Modernization Act rules] coming on board, too, other commodities, other nut groups and low-moisture food groups are going to have to start making this investment.”

“We like to see lots of options available. There isn’t one system that fits all for every single processor. It’s nice to have new technology that comes into the mix — another tool the industry can use,” Birmingham said.

Almond production in CA is down somewhat this year, although prices remain high (last year’s set a record.) However, the drought in CA is continuing to cause problems for almond growers, as well as other farmers in the Golden State.

California produces nearly all the almonds consumed in the U.S. About 30-40 percent of the CA crop (estimated at 1.85 billion pounds from 890,000 acres in 2015) is sold in this country, with the rest exported around the world.

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Harvest time in an almond orchard.