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I N S T I T U T E

Fact Sheet

Mandatory Sterilization of Raw Almonds

In response to outbreaks of Salmonella in 2001 and 2004 traced to raw almonds grown in California, the Almond Board of California and the USDA have created a mandatory program requiring all raw almonds to be **sterilized** through one of several treatment processes that the industry generously describes as “pasteurization.”

The new regulation was to take effect on September 1, 2007. The California Almond Board has now proposed a delay until March 2008 due to the industry's inability to have the infrastructure in place to treat all almonds as would have been required. The rule was sought by the Almond Board of California and approved by the USDA on March 30, 2007. Only growers selling almonds from roadside stands will be able to sell truly raw, unpasteurized almonds to consumers.

This new rule is controversial for many reasons. It could force family farms out of business, ignores the underlying systemic problems with conventional agriculture that cause food contamination, and is unacceptable to consumers seeking organic and raw foods.

The Cornucopia Institute believes that the rule is drastic and premature, and that its implementation should be suspended to allow time for all stakeholders to comment to the USDA while permitting the scientific support for the treatment plan to be completed.

Background

The rule is a response to two outbreaks of Salmonella poisoning, which sickened more than 100 people in Canada in 2001 and 29 people in the U.S. and Canada in 2004. One person died in the 2004 outbreak, and a costly lawsuit against a major almond processor ensued. The Salmonella outbreak of 2004 was traced to Paramount Farms, the world's largest supplier of pistachios and almonds, with 9000 acres of nut crop production, although the source of the bacteria was never identified. (Salmonella is directly associated with manure and other fecal matter).

Following the last Salmonella outbreak, the Almond Board of California (which is a marketing order and part of the USDA) initiated an "action plan" to research technologies and create rules that would prevent another contamination. Under the new regulation, California almond growers will be required to sterilize their almonds.

The Pasteurization Process

The most common method of sterilizing almonds is **propylene oxide (PPO) fumigation**. Other *pasteurization* methods include steam heating, oil roasting, and blanching. Organic “raw” almonds will not be fumigated, but will undergo the steam pasteurization, so that they are no longer truly raw.

Both PPO and steam treatments kill bacteria with a 5-log reduction, meaning that if 100,000 harmful pathogens are present on an almond before treatment, only one will remain afterward. However, a risk assessment conducted by the Almond Board determined that only a 4-log reduction is necessary. This indicates that other non-chemical and non-heat treatments may be available that could sufficiently eliminate the risk of contamination. The Almond Board is researching many alternative technologies, and should not have implemented the rule until thorough studies were complete.

Questions about Safety

A highly toxic chemical, PPO poses severe risks to human health. The Environmental Protection Agency (EPA) [recognizes](#) it as a carcinogen and cause of disease, and as a suspected toxicant of the liver and the gastrointestinal, immune, developmental, and respiratory systems. According to the EPA, short-term contact to propylene oxide has caused eye and respiratory tract irritation, skin irritation and necrosis, depressed central nervous systems, and inflammatory lesions in the nose and lungs. Chronic exposure to PPO has caused neurological damage.

PPO is so toxic that it is **not even registered for use** as a food processing agent in many parts of the world, including most of Europe, Africa, Asia, and Canada. It is also banned by the U.S. Hot Rod Association as too carcinogenic even to be used as a racing fuel! Yet despite its many dangers, the Almond Board of California and the USDA are willing to employ this toxic treatment to protect almond marketers from future food liability lawsuits.

The primary use of PPO is the production of polyethers, but it is also used to fumigate foods and plastic medical instruments, and in the production of dipropylene glycol and glycol ethers (as herbicides, as solvents, and in the preparation of lubricants, surfactants, and oil demulsifiers.) It is a popular wood varnish—hardly suitable for human consumption!

According to a pollution information resource, [Scorecard](#), it ranks in the top 10% of compounds most hazardous to human health and ecosystems. In fact, it is listed on several federal regulatory lists, including as an air pollutant and an “Extremely Hazardous Substance.”

Another major concern is that pasteurization/sterilization by either of the approved processes may in fact increase the risk of pathogenic contamination if the almonds come into contact with harmful bacteria along the path between processing and the consumer. Some scientific studies indicate that eliminating all bacteria on the surface of foods creates a sterile environment that is more likely to facilitate the survival of harmful bacteria, like Salmonella. If almonds come into contact with dangerous, pathogenic bacteria after pasteurization, the likelihood that these bacteria will sicken consumers could be higher than it would be in unpasteurized almonds.

Furthermore, if raw almonds are not able to be grown and marketed by U.S. producers, consumers will seek to buy them from foreign countries as imported almonds will not be

required to be pasteurized before sale to U.S. consumers

An Unnecessary Financial Burden for Small-Scale and Organic Farmers

It is unreasonable to require small-scale and organic farms to pay the additional costs of pasteurization since they were never part of the Salmonella problem. The equipment to pasteurize almonds is very expensive. A propylene oxide chamber costs \$500,000 to \$1,250,000, and a roasting line can cost as much as \$1,500,000 to \$2,500,000. Smaller, family-operated handlers that buy almonds from small, family-owned almond growers, and cater to the organic and natural foods markets, are concerned that they will not be able to afford such expensive equipment.

In addition to the costs of the chemical and steam treatments, more costs could be incurred by transporting the almonds to pasteurization facilities, as well as documenting the procedures. Many small-scale farmers market raw almonds directly, and this additional step could be financially burdensome.

Although the Almond Board contends that small handlers may outsource pasteurization, small handlers that pride themselves in getting fresh almonds to consumers quickly may have to absorb the cost of trucking the almonds back and forth from the pasteurization plant—adding expenses for as well as environmental impacts from the extra trucking (pollution/climate impacts). All this could place them at a fatal competitive disadvantage.

The Almond Board asserts that pasteurization will cost handlers \$0.04 to \$0.05 extra per pound, but this estimate is based on large volumes. Because pasteurization companies often charge a flat rate no matter the quantity of almonds, it could be four or five times more expensive for small-scale almond producers to pasteurize almonds than it will be for industrial-scale producers. Furthermore, the requirement for segregation in these processing facilities, under the federal organic standards, will further increase cost for organic growers and marketers.

There is no comprehensive analysis of the economic impact of the rule on small-scale producers and handlers, which should have been addressed prior to the passage of the law.

Locking American Farmers out of Domestic and Foreign Markets

The approximately 6,000 almond growers in California produce over 1 billion pounds of almonds annually, and 70% are exported. The added costs of pasteurization will put California almond growers at a distinct economic disadvantage.

In the U.S., many food retailers and companies that use raw almonds in their products are already planning to buy raw almonds from Spain, Italy, and other foreign sources once the rule goes into effect, because of the projected cost difference, because they want true raw almonds in their products, and because they want to alleviate consumer concern.

This could also happen in foreign markets, and although unpasteurized almonds will be permitted for export, foreign buyers may question the safety and quality of California almonds given this new rule.

Deceptive Labeling of “Raw” Almonds

The new rule creates misleading and deceptive labeling. Almonds that have been fumigated and steam treated, or roasted or blanched, will be labeled “raw,” despite having undergone heating or chemical treatments for pasteurization. Consumers who purchase “raw” almonds may well think that those almonds are natural and unprocessed, and could potentially take legal action against retailers who sell the mislabeled almonds.

Moreover, there will be no label requirement to specify what kind of pasteurization treatment was used among the many approved methods or combination of options. For consumers who wish to avoid propylene oxide–fumigated almonds, the only option is to purchase certified organic almonds. Low-income consumers who cannot afford the price premium of organics may find their options to be less than desirable: purchase almonds treated with a potentially carcinogenic chemical, and risk the long-term health effects, or forego almonds altogether.

The Loss of a Fresh, Nutritional Food Source and Consumer Choice

Many people have health, religious, and other personal reasons for choosing raw foods.

The new rule has especially outraged members of the *raw foods community*, who believe that uncooked foods, or “living foods,” offer substantial health benefits. While pasteurized almonds that are not oil roasted or blanched will still sprout—and therefore be considered “living”—many raw food consumers consider any kind of processing and heat treatment of food to be detrimental to its inherent quality and nutritional benefits.

Also, diets based on raw foods are integral to some religions denominations, such as Seventh-Day Adventism, so the rule poses a threat not only to consumer choice, but to religious freedom as well.

The Rule Fails to Address the Dangerous and Unsustainable Practices of Conventional Agriculture

Many small-scale almond growers use sustainable farming methods that encourage biodiversity and prevent the spread of bacteria such as Salmonella. On these farms, weeds and grasses, in the understory, naturally protect against pathogens, which is not true of conventional farms. Many if not most conventional growers utilize herbicides to create a “clean” understory to better facilitate the mechanical harvesting process. These chemicals not only kill weeds and grasses but beneficial organisms that keep some pathogenic and opportunistic species in check.

Although the Almond Board insists that all almond growers use “good agricultural practices (GAPs),” these guidelines do not include provisions for eliminating pesticides and herbicides or increasing biodiversity. Since organic farms are required to practice GAPs by law, and annually file a related *farm management plan* and receive annual compliance inspections, they should be exempt from the sterilization/pasteurization requirement.

Unlike milk, eggs, and meats, for which *real* pasteurization and cooking offers an important protection from food-borne illness, **no credible scientific evidence exists to show that almonds are an inherently risky food.** A risk assessment commissioned by the Almond Board showed

that as much as 1 % of the 15 million pounds of raw almonds grown in California have traces of Salmonella, meaning that 700,000 servings are contaminated. But if this is true, why have more people not become ill? No studies independent of the Almond Board have been done testing almond safety, and although two outbreaks may bring bad publicity and economic losses to the almond industry, it does not prove that almonds are inherently unsafe. Practically any food, raw or processed, has some risk of causing food-borne illness. Although the exception, there have been many documented cases in this country of pasteurized dairy products or cooked and preserved processed meats causing health problems due to contamination. It is unlikely that almonds are any more dangerous to consumers than lettuce, apples, even chocolate.

If all almonds now require pasteurization, what foods will be next on the list of mandatory sterilization, heat treatment, or irradiation? This may be the first step toward a sterile food environment that protects processors from lawsuits and facilitates industrial-scale food processing and distribution—which is exactly the kind of environment that fosters bacterial contamination.

Furthermore, future research undertaken by the USDA and the Almond Board should focus on the benefits of organic and sustainable farming in preventing Salmonella and other bacterial outbreaks—not developing technological Band-Aids to address the root causes of contaminated food. Many of these organic and sustainable techniques might have economic and cultural application on conventional farms as well.

Viable Alternatives to the Rule

Universally implementing this rule is clearly unnecessary, and there are reasonable alternatives.

One alternative to this new rule would be to allow for and clearly label unpasteurized almonds—effectively warning consumers of potential risk for food contamination while at the same time protecting consumer choice.

Another alternative is to exempt small-scale and organic almond growers and handlers—since they have never been a document source of Salmonella or other contamination.

Demand Proper Participation in the Rule-Making Process

When the USDA proposed the new rule in December 2006, it was published in the Federal Register and the Administrative Procedures Act was followed, allowing the public a 45-day comment period. To make sure the almond industry knew about the proposal, the USDA then directly contacted—by mail or fax—115 select almond growers and handlers (out of a total of over 6000, inviting them to comment on the proposed rule.

While the USDA cannot be expected to individually inform all concerned consumers, it should have considered other stakeholders. Informing retailers, for example, who could have spread the word to consumers, would have been a reasonable course of action. They also could have invited more input from the organic community, including the California Certified Organic Farmers, or issued a press release that would have presumably been picked up by news and trade media outlets. They have done this in the past when publishing other new procedures through rulemaking.

Yet the USDA made no effort to alert stakeholders other than an elite subset within the almond industry; as a result, consumers and retailers were almost universally unaware of the proposed rule. **Only 18 public comments were received from the entire country—all from the almond industry!**

By the time public awareness of the new rule spread, made public by The Cornucopia Institute, it was already too late—the formal comment period had closed, with not a single comment from a concerned consumer, retailer, or public interest group. Thousands of consumers and retailers, many of them outraged after learning of the new rule, now wish to voice their concerns on this issue. The USDA should reopen the rule for public review and comment allowing citizens—who were previously unaware of this plan—to formally submit their comments.

Already, over 1,000 concerned farmers, handlers, retailers, consumers, and public interest groups have submitted comments to the USDA, and an online petition to stop implementation of the rule has garnered over 15,000 signatures.\

Take Action Now.

Go to The Cornucopia Institute's Save Almonds Campaign link found at www.cornucopia.org for details on contacting key officials to save almonds from the “pasteurization plan,” as well as updated news and actions.