

# Irradiation of Iceberg Lettuce and Spinach: Has It Gone Far Enough?

By Richard Fama and Russell Wheeler  
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Lettuce and spinach tainted with E. coli creates panic throughout the country. Raw onions contaminated with hepatitis kill four and sicken nearly 700. Salmonella-laden tomatoes make hundreds ill and raise fears of bioterrorism. While this may sound like something out of a bad horror movie, foodborne illness and the devastation it leaves behind – both in terms of human suffering and costs to our economy – should not be taken lightly. According to some estimates, in the United States alone there are approximately 76 million cases of foodborne illness annually, resulting in 325,000 hospitalizations, \$35 billion in medical costs and lost productivity and 5,000 deaths.

## Food Safety: More than GAPs

Must we continue to live with the turmoil created by organisms so small they cannot be seen by the naked eye, or is there a way to deliver safe and nutritious food at a price consumers can afford? A similar question was posed

to dairy producers in the early 1900s when 25 percent of all food- and waterborne illnesses that could be traced were linked to the consumption of milk. The answer then was pasteurization in combination with good management practices in dairy farms. The answer to today's foodborne illness woes may well lie with irradiation.

For years, cooking and washing, along with good agricultural practices by producers were the primary techniques used to control food-borne pathogens in fresh produce. Washing, however, is incapable of eliminating internalized bacteria, which become embedded deep inside produce tissue. And while heating produce can eliminate internalized bacteria, cooking lettuce and fruit is generally not a desirable or feasible option. Good agricultural practices at the producer level are a key component to controlling foodborne pathogens, but are insufficient to ensure food safety. Indeed, they must be accompanied by other techniques to maximize their effectiveness. Enter irradiation.

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## FDA's Final Rule

On Aug. 22, as a result of a petition filed by the National Food Processors Association (now the Grocery Manufacturers Association), FDA announced its final rule approving the use of irradiation at a dose up to 4 kiloGray to kill foodborne pathogens and extend the shelf life of iceberg lettuce and fresh spinach. The petition proposed that FDA's regulations be amended to provide for the safe use of ionized radiation to control foodborne pathogens, and extend shelf-life in a variety of foods, including raw and pre-processed vegetables, fruits and other agricultural products of plant origin. In a Dec. 4, 2007, letter, and on the heels of lettuce and spinach E. coli outbreaks and recalls, the petition was amended, requesting a response to part of the original appeal for the safe use of ionized radiation to control foodborne pathogens and extend shelf-life in spinach and iceberg lettuce only. As with other products, iceberg lettuce and spinach treated with irradiation must bear the radura, the international symbol for irradiation, and the statement "treated with radiation" or "treated by irradiation."

In the past, irradiation of produce was associated with mealy fruit and wilted, discolored leaves. Utilizing modern irradiation techniques and the lowest dose practical to achieve the desired effects, however, will result in minimal changes in organoleptic properties and nutritional values. And, while critics may argue that irradiation has unwanted and unintended side effects, such as the creation of 2-alkylcyclobutanones and furans, the FDA rule finds no increase in toxicity resulting from the irradiation of spinach and iceberg lettuce. In fact, FDA noted with few exceptions, the radiolysis products generated in a particular food through irradiation are the same or very similar to products formed in other types of food processing or under common storage conditions.

Now that producers have been given the green light to irradiate spinach and iceberg lettuce, industry must continue to push FDA to further study the use of irradiation to control foodborne pathogens in other produce and authorize its use, where safe and appropriate. Producers, however, must be mindful

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## IRRADIATION

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that irradiation is not a panacea. Good agricultural practices including the implementation of protocols addressing issues such as the prevention of run-off from contaminated sites, cross-contamination and sanitation, as well as employing other new technologies, such as nanotechnology in packaging, must be considered in order to fully ensure food safety.

### Organic Irradiation?

FDA, however, must do its part by taking steps to make it easier for producers to address the needs of consumers, while at the same time allowing producers to deliver products free of foodborne pathogens. One way FDA can accomplish this is by amending its rules to allow for the organic designation on produce that has been irradiated – something that it has thus far failed to do. According to one governmental study, people who eat organic and “natural” foods are eight times more likely as the rest of the population to contract E. coli O157:H7. This increase is generally believed to be the result of widespread use of manure as a fertilizer in organic farming. And while heat treatment, such as pasteurization, may effectively control foodborne pathogens like E. coli, it is impractical to use in fresh produce production. Furthermore, the transformation produce undergoes through irradiation is substantially similar, if not less, than that through canning or freezing –

techniques that would not otherwise preclude the organic designation under current FDA rules.

### Another Step Closer

Consumers should no longer be put at an increased risk of contracting foodborne illness simply because they wish to purchase organic products. The time has come to eliminate those risks and it is well within FDA's ability to do so. To be sure, it is not suggested that irradiation of organic produce be compulsory, or that such produce not bear the radura and a statement that the product has been treated with irradiation. Rather, consumers of organic produce should have the ability to make informed decisions of whether to purchase product that has not been treated with radiation or to reduce their risk of contracting foodborne illnesses by purchasing irradiated products otherwise complying with FDA's rules governing the organic designation.

FDA's final rule permitting irradiation of iceberg lettuce and spinach is a giant step forward toward protecting the American public from foodborne illness. Industry and FDA, however, must continue to advance the cause of food safety by encouraging a broad spectrum of food safety techniques, including providing all consumers, even those who purchase organic, greater access to irradiated products.

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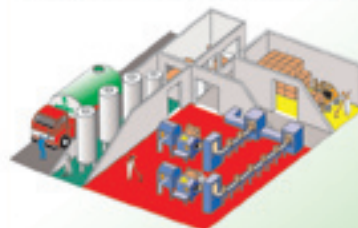
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