



Food Irradiation

Using radiation to kill bacteria and other pathogens in food is called food irradiation.

- Irradiating food kills bacteria and molds that can make people sick.
- Irradiation does not remove toxins that are already in food. Irradiation breaks chemical bonds to stop bacteria and other pathogens from multiplying.
- Irradiation does not make food radioactive.

About Food Irradiation

You are probably familiar with pasteurizing milk and pressure-cooking canned foods as ways to kill bacteria in food. Food irradiation is another way to kill bacteria and other pathogens such as mold and bacteria in our food. Irradiating food protects people in this world -- and out of this world as well! NASA astronauts eat food that has been irradiated to avoid any chance of food-borne illness in space.

Remember: Irradiation does not make food radioactive.

U.S. Centers for Disease Control and Prevention (CDC) reports that when food irradiation is done well, it helps with food safety:

- Food irradiation reduces or gets rid of pathogens, such as bacteria and molds that spoil food and cause food poisoning and other illness. For example, irradiation can kill E. coli, Campylobacter and Salmonella bacteria. These bacteria make millions of people sick and send thousands of people to the hospital each year. Animal feed also can contain Salmonella. Irradiation can prevent the spread of these bacteria to livestock.
- Irradiation preserves the nutritional value of the food.
- It slows down the aging of foods such as fruits and vegetables. Irradiating dry foods like spices and grains allows them to be stored for a long time. It also allows shipping of grains and spices over long distances.
- Food irradiation does not make food radioactive.

However, food irradiation cannot remove all food dangers and does create some problems:

- Irradiating food does not get rid of dangerous toxins that are already in food. In some cases, the bacteria themselves are not dangerous, but they produce toxins that are. C. botulinum is one of these bacteria. It grows in canned food that is not completely sterilized. Its toxin causes botulism, which can kill.
- Food irradiation does not stop fruit and vegetables from aging. Aging can lower their nutritional value, taste and flavor.
- Irradiation can alter slightly the flavor of some foods. The change is similar to the way pasteurization alters the taste of milk.

- Irradiated food does not meet the U.S. Department of Agriculture's definition of organic.

Currently, food irradiators use one of three kinds of radiation: gamma rays (from cobalt-60 sources), electron beams, or x-rays. To learn more about food irradiation methods, visit EPA's ⁱFood Irradiation webpage.

All three methods work the same way. Bulk or packaged food passes through a radiation chamber on a conveyor belt. The food does not come into contact with radioactive materials, but instead passes through a radiation beam, like a large flashlight.

The ionizing radiation sends enough energy into the bacterial or mold cells to break chemical bonds. This damages the pathogens enough that they die or can no longer multiply and cause illness or spoilage.

Rules and Guidance

U.S. FOOD AND DRUG ADMINISTRATION (FDA), CENTER FOR FOOD SAFETY AND APPLIED NUTRITION (CFSAN)

FDA has approved food irradiation methods for a number of foods. Irradiation can be used on herbs and spices, fresh fruits and vegetables, wheat, flour, pork, poultry and other meat, and some seafood. FDA requires that irradiated food labels contain both a logo and a statement that the food has been irradiated.

U.S. DEPARTMENT OF AGRICULTURE (USDA)

USDA works with FDA to promote food irradiation where it is appropriate. USDA also controls the use of the word "organic" on food labels. Foods which have been irradiated, no matter how they are grown or produced, cannot be labeled as USDA certified organic.



What you can do

Irradiating food does not make it radioactive. Members of the public are not exposed to radiation used in the irradiation of food. As a result, you do not need to do anything to protect yourself from the process.

However, owners and workers in irradiation facilities should follow all OSHA radiation protection rulesⁱⁱ. These rules protect workers from exposure to radiation.

Where to learn more

You can learn more about food irradiation by visiting the resources available on the following webpage:
<http://www.epa.gov/radtown/food-irradiation.html#learn-more>.

ⁱ http://www.epa.gov/radiation/sources/food_irrad.html

ⁱⁱ https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10098