



Health Physics Society
Specialists in Radiation Safety

Food Irradiation

What is food irradiation?

Food irradiation is the exposure of food products to ionizing radiation (e.g., energy sources) such as x rays or electron beams. Bulk or packaged foods pass through a radiation area on a conveyor belt where they are exposed to high levels of radiation. The food does not touch any radioactive materials and it is not made to be radioactive itself. A simple way to think about this exposure is to compare it to a flashlight: food is exposed to the light, but once the flashlight is turned off, the exposure ends and no light is left behind.

Why irradiate foods?

Irradiating food has a lot of benefits:

- Irradiation kills or sterilizes harmful germs such as bacteria and molds that spoil food and cause food poisoning and other illnesses. For example, irradiation kills *Escherichia coli* and *Salmonella* bacteria.
- Irradiation destroys insect infestations without the use of chemical insecticides.
- Irradiation slows down the aging of foods such as fruits and vegetables and thereby reduces food waste.
- Irradiation of dry foods like spices and grains allows them to be stored for a long time.
- Irradiation is used to sterilize foods, which is useful in hospitals for very sick patients, such as patients with AIDS or those undergoing treatment for cancer.

Is irradiated food radioactive?

No, irradiated food is not radioactive. The food does not touch radioactive materials, and the energy source (such as x rays) does not and cannot cause the food to become radioactive. This is similar to when individuals receive chest or dental x rays—they are not radioactive after the x ray has been performed.

Does irradiating food make it harmful to eat? Are there risks from eating irradiated food?

No, irradiated food is not harmful to eat and will not make you sick. There are no radiation-related risks from eating irradiated foods. Scientists have done many studies on irradiated foods, and there is almost no difference in nutritional value (how healthy a food is) between irradiated and nonirradiated foods. Irradiation can cause chemical changes that are analogous to those caused by cooking or canning the food. There is no valid scientific evidence, or plausible expectation, that consuming irradiated food would be harmful to humans. The very real benefit of this treatment technology is to



Fun fact! NASA astronauts eat meat that has been sterilized by irradiation to avoid getting foodborne illnesses when they are in outer space.

increase the availability of healthy and nutritious food supplies. This benefit far outweighs any purported risks of chemical changes in the food. Thus, it is safe to eat irradiated food.

Should irradiated food be cooked or prepared differently than nonirradiated food?

No, irradiated food does not need to be cooked or prepared differently than nonirradiated food. Irradiated food should be stored, handled, and cooked in the same way as nonirradiated food. Always use common sense and good judgement, and follow regular food safety rules when cooking irradiated food, just like nonirradiated food, to keep you and your family safe.

How do I know if my food has been irradiated?

The Food and Drug Administration (FDA) requires that irradiated foods show the Radura, which is an international symbol that indicates an irradiated food product. The Radura is usually green and resembles a plant in circle. The top half of the circle is dashed. Graphical details and colors vary between countries. Look for the Radura along with the statement "Treated with radiation" or "Treated by irradiation" on the food label.



Who regulates or controls food irradiation in the United States?

The FDA and the US Department of Agriculture's (USDA) Food Safety and Inspection Service regulate or control food irradiation.

For more information, check out the following links:

- FDA FAQs: <https://www.fda.gov/food/resourcesforyou/consumers/ucm261680.htm>
- Environmental Protection Agency fact sheet: <https://www3.epa.gov/radtown/food-irradiation.html>
- USDA FAQs: <https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/production-and-inspection/irradiation-and-food-safety/irradiation-food-safety-faq>
- Centers for Disease Control and Prevention publication: https://wwwnc.cdc.gov/eid/article/7/7/01-7706_article
- More about Radura: https://openi.nlm.nih.gov/detailedresult.php?img=PMC5302430_foods-05-00079-g001&req=4

The Health Physics Society is a nonprofit scientific professional organization whose mission is excellence in the science and practice of radiation safety. Formed in 1956, the Society has approximately 3,500 scientists, physicians, engineers, lawyers, and other professionals. Activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. The Society may be contacted at 950 Herndon Parkway, Suite 450, Herndon, VA 20170; phone: 703-790-1745; fax: 703-790-2672; email: HPS@BurkInc.com.