



The Top 10 Problems With Irradiated Food

Food irradiation companies, food industry groups and even federal government officials have insisted for nearly a half-century that Americans who eat irradiated foods have nothing to worry about.

They say irradiated foods are nutritious, wholesome and taste just like regular food. They say research demonstrates that irradiated foods are safe for human consumption. They say that irradiation facilities are safe. They say that irradiation causes no adverse economic impacts.

Here are 10 reasons why they're wrong.

1) Research dating to the 1950s has revealed a wide range of health problems in animals that ate irradiated foods, including premature death, a rare form of cancer, stillbirths and other reproductive problems, mutations and other genetic damage, organ malfunctions, stunted growth and vitamin deficiencies.^{1,2,3,4}

2) Irradiation masks filthy conditions in slaughterhouses and food processing plants, which cause meat to be contaminated with foodborne pathogens. Irradiation can kill most bacteria in food, but it does nothing to remove the feces, urine, pus and vomit that often contaminate beef, pork, chicken and other meat.^{5,6}

3) Irradiation uses ionizing types of radiation – electron beams, gamma rays and X-rays – that disrupt the chemical composition of everything in its path. Many new chemicals called “radiolytic products” are formed by irradiation –

some of which do not naturally occur in food, and that the FDA has not adequately studied for safety. One type of chemical, called 2-ACBs, was recently found to promote the cancer-development process in rats, cause genetic damage in rats, and cause genetic and cellular damage in human and rat cells.^{7,8,9,10}

4) Irradiation destroys and disrupts vitamins, protein, essential fatty acids and other nutrients in food – sometimes significantly. It can destroy up to 80 percent of vitamin A in eggs and 48 percent of beta carotene in orange juice, but the FDA nonetheless legalized irradiation for these products.^{11,12}

5) In legalizing and endorsing food irradiation, the U.S. Food and Drug Administration and the World Health Organization, respectively, ignored a vast amount of research suggesting that irradiated foods are not safe for human consumption.^{13,14}

6) Because it can increase the shelf life of food and utilize centralized facilities, irradiation may further encourage the globalization and consolidation of the food production, distribution and retailing industries. Due to these existing trends, agriculture operations have moved outside the U.S., multitudes of family farmers and ranchers have been forced out of business, product diversity has been reduced, and local economies in developing nations have been disrupted.

7) Irradiation can exacerbate the problems faced by family farms because it could open the floodgates to low-cost, imported food. Irradiation facilities have been constructed in many countries that export large amounts of fruit, vegetables and meat, including Argentina, Australia, Brazil, Chile, Mexico and New Zealand. Brazil, already major meat exporter, is being touted as the “fruitbasket of the world.”

8) Irradiation can change the flavor, odor and texture of food – sometimes disgustingly so. Pork can turn red, beef can smell like a wet dog, and fruit and vegetables can become mushy.^{15,16,17}

9) Irradiation facilities can create air pollution, worker safety and environmental hazards. Smog-forming ozone is released from facilities that use electron-firing linear accelerators. Several deaths and numerous injuries have occurred at irradiation plants throughout the world. Dozens of accidents and acts of misconduct have been reported. In 1988, after more than 30 Nuclear Regulatory Commission violations – including throwing radioactive garbage into the trash – the president of a New Jersey irradiation company was charged with numerous federal crimes, including conspiracy to defraud the NRC. The president, who threatened to fire workers who did not lie to NRC investigators, was sentenced to two years in prison.¹⁸

10) Soon, some irradiation plants may use cesium-137, a highly radioactive waste material left over from the production of nuclear weapons. This material is dangerous and unstable. In 1988, a cesium-137 leak near Atlanta led to a \$40 million, taxpayer-funded cleanup.¹⁹

Notes

- ¹ *A Broken Record: How the FDA Legalized - and Continues to Legalize - Food Irradiation Without Testing it for Safety*. Washington, D.C.: Public Citizen, Cancer Prevention Coalition, Global Resource Action Center for the Environment, Oct. 2000.
- ² Kesavan, P.C., Swaminathan, M.S. “Cytotoxic and mutagenic effects of irradiated substrates and food material.” *Radiation Botany*, 11:253-181, 1971.
- ³ Schubert, J. “Mutagenicity and cytotoxicity of irradiated foods and food components.” *Bulletin of the World Health Organization*, 41:873-904, 1969.
- ⁴ Spiher, A.T. “Food Irradiation: An FDA Report.” *FDA Papers*, Oct. 1968.
- ⁵ Nestor, F. and Hauter, W. *The Jungle 2000: Is America's Meat Fit to Eat?* Washington, D.C.: Government Accountability Project, Public Citizen, Sept. 2000.
- ⁶ Piccioni, R. “Food irradiation: Contaminating our food.” *The Ecologist*, 18:2:48-55.
- ⁷ Delincée, H. and Pool-Zobel, B. Genotoxic properties of 2-dodecylcyclobutanone, a compound formed on irradiation of food containing fat. *Radiation Physics and Chemistry*, 52: 39-42, 1998.
- ⁸ Delincée, H. et al. Genotoxicity of 2-dodecylcyclobutanone. Food Irradiation: Fifth German Conference, Karlsruhe, November 11-13, 1998.
- ⁹ Delincée, H. et al. “Genotoxicity of 2-alkylcyclobutanones, markers for an irradiation treatment in fat-containing food – Part I: cyto- and genotoxic potential of 2-tetradecylcyclobutanone.” *Radiation Physics and Chemistry*, 63:431-435, 2002.
- ¹⁰ D. Burnouf, H. Delincée, A. Hartwig, E. Marchioni, M. Miesch, F. Raul, D. Werner (2001), Etude toxicologique transfrontalière destinée à évaluer le risque encouru lors de la consommation d'aliments gras ionisés - Toxikologische Untersuchung zur Risikobewertung beim Verzehr von bestrahlten fetthaltigen Lebensmitteln - Eine französisch-deutsche Studie im Grenzraum Oberrhein, Rapport final d'étude Interreg II, projet N° 3.171. BFE-R-02-02, Federal Research Centre for Nutrition, Karlsruhe, Germany.
- ¹¹ FDA Memorandum, from Kim Morehouse, Ph.D. to William Trotter, Ph.D. April 11, 2000.
- ¹² FDA Memorandum, from Antonio Mattia, Ph.D. to William Trotter, Ph.D. Nov. 2, 1999.
- ¹³ Op. cit, Note 1.
- ¹⁴ *Bad Taste: The Disturbing Truth About the World Health Organization's Endorsement of Food Irradiation*. Washington, D.C.: Public Citizen, October 2002.
- ¹⁵ Webb, T. et al. *Food Irradiation: Who Wants It?* Rochester, Vermont: Thorsons Publishers, 1987.
- ¹⁶ Huang, S. et al. “Effect of electron beam irradiation on physical, physicochemical and functional properties of liquid egg during frozen storage.” *Poultry Science*, 76:1607-15, 1997.
- ¹⁷ Wong, Y.C. et al. “Comparison between irradiated and thermally pasteurized liquid egg white on functional, physical and microbiological properties.” *Poultry Science*, 75:803-808, 1996.
- ¹⁸ “Executive convicted in radiation spill.” *North Jersey Advocate*, Oct. 30, 1986.
- ¹⁹ “Last radioactive capsules taken from DeKalb plant.” *Macon Telegraph*, Nov. 20, 1990.



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