



The Top 10 Problems with Irradiated Food

Food irradiation companies, food industry lobbying groups and even federal governments officials have insisted for nearly a half-century that Americans who eat irradiated food have nothing to worry about. They say it's nutritious, safe, wholesome and tastes just like regular food. Here are 10 reasons why they're wrong.

1) In legalizing food irradiation, the U.S. Food and Drug Administration (FDA) did not determine a level of radiation to which food can be exposed and still be safe for human consumption, which federal law requires.^{1,2}

2) In legalizing food irradiation, the FDA relied on laboratory research that did not meet modern scientific protocols, which federal law requires.^{3,4}

3) Research dating to the 1950s has revealed a wide range of problems in animals that ate irradiated food, including premature death, a rare form of cancer, stillbirths, genetic damage, organ malfunctions, low weight gain and vitamin deficiencies.^{5,6,7,8}

4) Irradiation masks and encourages filthy conditions in slaughterhouses and food processing plants.^{9,10} Irradiation can kill most bacteria in food, but it does nothing to remove the feces, urine, pus and vomit that often contaminates beef, pork, chicken and other meat.

5) Irradiation destroys vitamins, essential fatty acids and other nutrients in food — sometimes significantly. The process destroys 80 percent of vitamin A in eggs and 48 percent of beta carotene in orange juice, but the FDA nonetheless legalized irradiation of these products.^{11,12}

6) Irradiation can change the flavor, odor and texture of food — sometimes disgustingly so. Pork can turn red; beef can smell like a wet dog; fruit and vegetables can become mushy; and eggs can lose their color, become runny and ruin recipes.^{13,14,15}

7) Irradiation disrupts the chemical composition of everything in its path — not just harmful bacteria, which the food industry often asserts. Scores of new chemicals called “radiolytic products” are formed by irradiation — chemicals that do not naturally occur in food and that the FDA has never studied for safety. One such chemical, called 2-DCB, was recently found to cause genetic damage in rats and in human cells.^{16,17,18,19}

8) The World Health Organization did not follow its own recommendation to study the toxicity of “radiolytic products” formed in high-dose irradiated food before proposing in Nov. 2000 that the international irradiation dose limit — equal to 330 million chest x-rays — be removed.^{20,21}

9) 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.²²

10) Because it increases the shelf life of food and utilizes large, centralized facilities, irradiation encourages globalization and consolidation of the food production, distribution and retailing industries. These trends have already forced multitudes of family farmers and ranchers out of business, reduced the diversity of products in the marketplace, disrupted local economies in developing nations, and put American farmers and ranchers at a great economic disadvantage.²³

Notes

¹ U.S. Code of Federal Regulations, Title 21, § 170.22.

² Federal Register, various filings, 1983-2000.

³ U.S. Code of Federal Regulations, Title 21, § 170.20.

⁴ Federal Register, various filings, 1983-2000.

⁵ *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.

⁶ Kesavan, P.C., Swaminathan, M.S. “Cytotoxic and mutagenic effects of irradiated substrates and food material.” *Radiation Botany*, 11:253-181, 1971.

⁷ Schubert, J. “Mutagenicity and cytotoxicity of irradiated foods and food components.” *Bulletin of the World Health Organization*, 41:873-904, 1969.

⁸ Spiher, A.T. “Food Irradiation: An FDA Report.” *FDA Papers*, Oct. 1968.

⁹ 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.

¹⁰ Piccioni, R. “Food irradiation: Contaminating our food.” *The Ecologist*, 18:2:48-55.

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 Webb, T. et al. *Food Irradiation: Who Wants It?* Rochester, Vermont: Thorsons Publishers, 1987.

¹⁴ 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.

¹⁵ 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.

¹⁶ Murray, D. *Biology of Food Irradiation.* Somerset, England: Research Studies Press Ltd., 1990.

¹⁷ Op. cit. Note 5.

¹⁸ Delincee, 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.

¹⁹ Delincee, H. et al. Genotoxicity of 2-dodecylcyclobutanone. Food Irradiation: Fifth German Conference, Karlsruhe, November 11-13, 1998

²⁰ *International Consultative Group on Food Irradiation: Review of Data on High Dose (10-70 kGy) Irradiation of Food.* Report of a Consultation, Karlsruhe, 29 August - 2 September 1994. Geneva: World Health Organization, 1994.

²¹ *High-Dose Irradiation: Wholesomeness of Food Irradiated with Doses Above 10 kGy.* Report of a Joint FAO/IAEA/WHO Study Group. Technical Report Series 890. Geneva: World Health Organization, 1999.

²² “Last radioactive capsules taken from DeKalb plant.” *Macon Telegraph*, Nov. 20, 1990.

²³ *A Citizen's Guide to Fighting Food Irradiation.* Washington, D.C.: Public Citizen's Critical Mass Energy and Environment Program, 2000.



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