

# WHAT'S WRONG WITH FOOD IRRADIATION

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## **Irradiation damages the quality of food.**

- Irradiation damages food by breaking up molecules and creating free radicals. The free radicals kill some bacteria, but not all! The free radicals bounce around in the food, damage vitamins and enzymes, and combine with existing chemicals (like pesticides) in the food to form new chemicals, called unique radiolytic products (URPs).
- Some of these URPs are known toxins (e.g., benzene, formaldehyde). Some are unique to irradiated foods and never studied. In the approval of irradiation, the long-term effect of these new chemicals in our diet were never studied.
- Irradiated foods lose 5%-80% of vitamins A, C, E, K or B complex. That's a big range, but foods vary greatly. Different foods lose different vitamins. Also, the amount of loss changes when the dose of irradiation or storage time is changed.
- Most of the food in the American diet is already approved for irradiation by the US Food and Drug Administration (FDA): beef, pork, lamb, poultry, wheat, wheat flour, vegetables, fruits, eggs in the shell, seeds for sprouting, spices, herb teas. (Dairy is already pasteurized). The FDA is currently considering a food industry petition to irradiate luncheon meats, salad bar items, sprouts, fresh juices and frozen foods. The USDA is considering irradiation for imported fruits and vegetables.
- Like cooking, irradiation damages the enzymes found in raw foods. This means our bodies must work harder to digest them.
- Irradiation by any source--electron beams, x-rays or nuclear gamma rays--has the same effect on the food.

## **Science has not proved that a diet high in irradiated foods is safe in the long term.**

- The longest human feeding study was 15 weeks, in China. The data is not available in English. No one knows the health effects of a life-long diet that includes a large number of foods that can already be legally irradiated in the U.S., such as meat, chicken, vegetables, fruits, salads, eggs and sprouts.
- There are no studies on the effects of feeding normal babies or children diets containing irradiated foods. A very small study from India on malnourished children showed health effects.
- Studies on animals fed irradiated foods have shown increased tumors, reproductive failures and kidney damage. Some possible causes are: irradiation-induced vitamin deficiencies, the inactivity of enzymes in the food, DNA damage, and toxic radiolytic products in the food.

- The FDA based its approval of irradiation for poultry on only seven of 441 animal-feeding studies submitted. Marcia van Gemert, Ph.D., the toxicologist who chaired the FDA committee that approved irradiation, later said, "These studies reviewed in the 1982 literature from the FDA were not adequate by 1982 standards, and are even less accurate by 1993 standards to evaluate the safety of any product, especially a food product such as irradiated food." The seven studies are not a good basis for approval of irradiation for humans, because they showed health effects on the animals or were conducted using irradiation at lower energies than those the FDA eventually approved.
- The FDA based its approval of irradiation for fruits and vegetables on a theoretical calculation of the amount of URPs in the diet from one 7.5 oz. serving/day of irradiated food. Considering the different kinds of foods approved for irradiation, this quantity is too small and the calculation is irrelevant.
- Even with current labeling requirements, people cannot avoid eating irradiated food. That means there is no control group, and epidemiologists will never be able to determine if irradiated food has any health effects.

## **Irradiation covers up problems that the meat and poultry industry should solve**

- Irradiation covers up the increased fecal contamination that results from speeded up slaughter and decreased federal inspection. Prodded by the industry, the USDA has allowed a transfer of inspection to company inspectors. Where government inspectors remain, they are not allowed to condemn meat and poultry now that they condemned 20 years ago.
- Because of this deregulation, the meat and poultry industry since the '90s has lost money and suffered bad publicity from food-poisoning lawsuits and expensive product recalls. Irradiation is a "magic bullet" that will enable them to say that the product was "clean" when it left the packing plant. (Irradiation, however, does not sterilize food, and any bacteria that remain can multiply to toxic proportions if the food is not properly stored and handled.)

## **Labeling is necessary to inform people so they can choose to avoid irradiated foods.**

- Because irradiated foods have not been proven safe for human health in the long term, prominent, conspicuous and truthful labels are necessary for all irradiated foods. Consumers should be able to easily determine if their food has been irradiated. Labels should also be required for irradiated ingredients of compound foods, and for restaurant and institutional foods.

- Because irradiation depletes vitamins, labels should state the amount of vitamin loss after irradiation, especially for fresh foods that are usually eaten fresh. Consumers have the right to know if they are buying nutritionally impaired foods.
- Current US labels are not sufficient to enable consumers to avoid irradiated food. Foods are labeled only to the first purchaser. Irradiated spices, herb teas and supplement ingredients, foods that are served in restaurants, schools, etc., or receive further processing, do not bear consumer labels. Labels are required only for irradiated foods sold whole (like a piece of fruit) or irradiated in the package (like chicken breasts). A radura is required. The text with the declaration of irradiation can be as small as the type face on the ingredient label. The US Department of Agriculture requirements have one difference: irradiated meat or poultry that is part of another food (like a tv dinner) must be disclosed on the label.
- The US Food and Drug Administration is currently rewriting the regulation for minimum labeling, and will release it for public comment in 2002. They may eliminate all required text labels. If they do retain the labels, Congress has already told them to use an alternative term instead of "irradiation."

#### **Electron-beam irradiation today means nuclear irradiation tomorrow.**

- The original sponsor of food irradiation in the US was the Department of Energy, which wanted to create a favorable image of nuclear power as well as dispose of radioactive waste. These goals have not changed.
- Many foods cannot be irradiated using electron beams. E-beams only penetrate 1-1.5 inches on each side, and are suitable only for flat, evenly sized foods like patties. Large fruits, foods in boxes, and irregularly shaped foods must be irradiated using x-rays or gamma rays from nuclear materials.
- Countries that lack a cheap and reliable source of electricity for e-beams use nuclear materials. Opening U.S. markets to irradiated food encourages the spread of nuclear irradiation worldwide for export crops.

#### **Irradiation using radioactive materials is an environmental hazard.**

- Nuclear irradiation facilities have already contaminated the environment. For example, in the state of Georgia in 1988, radioactive water escaped from an irradiation facility. The taxpayers were stuck with \$47 million in

cleanup costs. Radioactivity was tracked into cars and homes. In Hawaii in 1967 and New Jersey in 1982, radioactive water was flushed into the public sewer system. Numerous worker exposures have occurred in food irradiation facilities worldwide.

#### **Irradiation doesn't provide clean food.**

- Because irradiation doesn't sterilize (kill all the bacteria in a food), the ones that survive are by definition radiation-resistant. These bacteria will multiply and eventually work their way back to the 'animal factories'. Eventually, the bacteria that contaminate the meat will no longer be killed by currently approved doses of irradiation. The technology will no longer be usable, while stronger bacteria contaminate our food supply.
- Irradiation doesn't kill all the bacteria in a food. In a few hours at room temperature, the bacteria remaining in meat or poultry after irradiation can multiply to the level existing before irradiation.
- Some bacteria, like the one that causes botulism, as well as viruses and prions (which are believed to cause Mad Cow Disease) are not killed by current doses of irradiation or by doses that leave the food palatable.

#### **Irradiation does nothing to change the way food is grown and produced.**

- Irradiated foods can have longer shelf lives than nonirradiated foods, which means they can be shipped further while appearing 'fresh.' Food grown by giant farms far away may last longer than nonirradiated, locally grown food, even if it is inferior in nutrition and taste. Thus, irradiation encourages centralization and hurts small farmers.
- The use of pesticides, antibiotics, hormones and other agrochemicals, as well as pollution and energy use, are not affected. Irradiation is applied by the packer after harvest or slaughter.
- Free-market economists say irradiation is 'efficient': it provides the cheapest possible food for the least possible risk. But these economists are not considering the impaired nutritional quality of the food, the environmental effects of large-scale corporate farming, the social costs of centralization of agriculture and loss of family farms, the potential long-term damage to human health, and the possibility of irradiation-resistant super-bacteria. All of these developments should be (but are not) considered when regulators and public health officials evaluate the benefits of food irradiation.

