

Good news for chicken lovers: FDA approves irradiation for poultry

by Marjorie Mazel Hecht

Food-borne illnesses are on the rise and salmonella in poultry is one of the leading culprits, but a safe and effective remedy was just given the go-ahead by the Food and Drug Administration (FDA).

On May 1, the FDA approved the use of low-dose irradiation to control salmonella and other illness-causing bacteria in fresh or frozen poultry. This means that poultry producers will have the capability to greatly reduce the salmonella and other bacteria that now contaminate an estimated 30- 60% of U.S. chicken and turkey and cause an estimated 4,000 deaths annually. In a recent government study, three out of five raw chickens were found to have salmonella bacteria present.

The FDA stated that the use of gamma irradiation, electron radiation, and x-rays to treat poultry and its parts is safe and effective at the 3 kilogray level approved (the gray is a unit used to measure absorbed dose). In fact, the FDA noted, "there is no evidence that irradiation at any level would be hazardous." The treated products will have labels that bear the international symbol of irradiated food and that state that the product was processed with radiation.

Poultry products that are treated with ionizing radiation at the 3 kilogray level will still require refrigeration to keep any surviving organisms from multiplying. In the radiation process, very short wavelength gamma rays penetrate inside solid particles and kill microorganisms by breaking down the cell walls or destroying the metabolic pathways of the organism so that the cell dies. At higher doses, all microorganisms are killed, sterilizing the processed food.

There is no radioactivity induced in the processed food. The reaction caused by the ionizing radiation does not change the atomic structure of the food molecules.

First approval to control bacteria

Although the FDA had previously approved food irradiation to control insects in fruits, vegetables, grains, and spices, to retard spoilage in potatoes, and to control parasites in pork, this is the first approval aimed at controlling bacteria that cause illness in humans.

Disease-causing microorganisms like salmonella are not a small problem. About 40,000 cases of salmonella poisoning are reported each year to the Centers for Disease Control, and the number of unreported cases could be anywhere from

400,000 to 4 million. FDA experts estimate that almost every American suffers a food-borne gastrointestinal illness over the course of a year or two. Salmonellosis can cause a variety of flu-like symptoms—nausea, fever, stomach pains, headaches, and vomiting.

Salmonella and other microorganisms are killed when poultry is cooked to an internal temperature of 185°F, but often the organisms cause disease when the raw poultry contaminates other foods or cooking utensils. (Hence, all the warnings about washing your hands, your cutting board, and anything else that comes in contact with raw poultry, and making sure the poultry is thoroughly cooked.)

The most studied food process

Food irradiation is the most scientifically researched food process in man's history. The studies began during World War II, when researchers were looking for ways to supply troops with wholesome and tasty food. Today, more than 40 years of research and thousands of studies later, the technology has the full weight of the international scientific community attesting to the safety and wholesomeness of the product.

Thirty-six countries have approved the use of irradiated food, although here in the United States, which led the world in pioneering the research, the professional anti-nuclear activists have ignored the scientific evidence and spread fear propaganda about irradiation "poisoning" food. Actually, the low-dose radiation processing—and even sterilization-level high-dose processing—produce food that has a better nutritional content than ordinary canned food products.

The FDA approval process was initiated by a petition submitted 12 years ago by food irradiation pioneer Dr. Martin Welt and his former company, Radiation Technology, Inc., in New Jersey. The history of this petition is instructive in showing how carefully the FDA reviewed the matter—and its political nature.

"Many people are not aware of the effort that went into this approval over the past 12 years," Welt said in an interview on May 9. "When the initial petition was submitted in 1978, there was really no precedent for it. No one knew what was required. After a preliminary review of the scientific content, the petition was published in the *Federal Register*.

"Then it was decided that the U.S. Department of Agri-

culture had to be involved in the review. At a 1980 meeting with the USDA and the FDA, we decided that the major problem to be solved was insufficient data on botulism. This is the question of what happens in an abusive situation after irradiation processing—one where the poultry is not refrigerated or where for some reason the air is anaerobic, without oxygen—would these conditions liberate botulism? And would this botulism go undetected because the usual warnings of spoilage—sliminess or smell—would have been retarded by the radiation processing?”

Welt said that the FDA wanted a study done with botulism Type E, which was the fastest growing, although the most common botulism found in poultry are Type A and B. The study was carried out at the U.S. Army laboratory in Natick, Massachusetts, and the results were presented in 1983, demonstrating that radiation-treated poultry would still show signs of spoilage in abusive conditions before any botulism was released. However, the FDA then decided that the data were needed also for botulism Type A and B.

Because the Army had closed down its irradiation program, this second study was carried out at Johns Hopkins University in Baltimore, using the most advanced immunoassay methods. These results corroborated the Army results: Poultry processed with 3 kilograys of radiation and then subjected to abusive conditions would spoil before any botulism was released.

Late in 1985, Welt was informed that the scientific review of the poultry petition was completed. From that time to the present, the question of approval has been a political one.

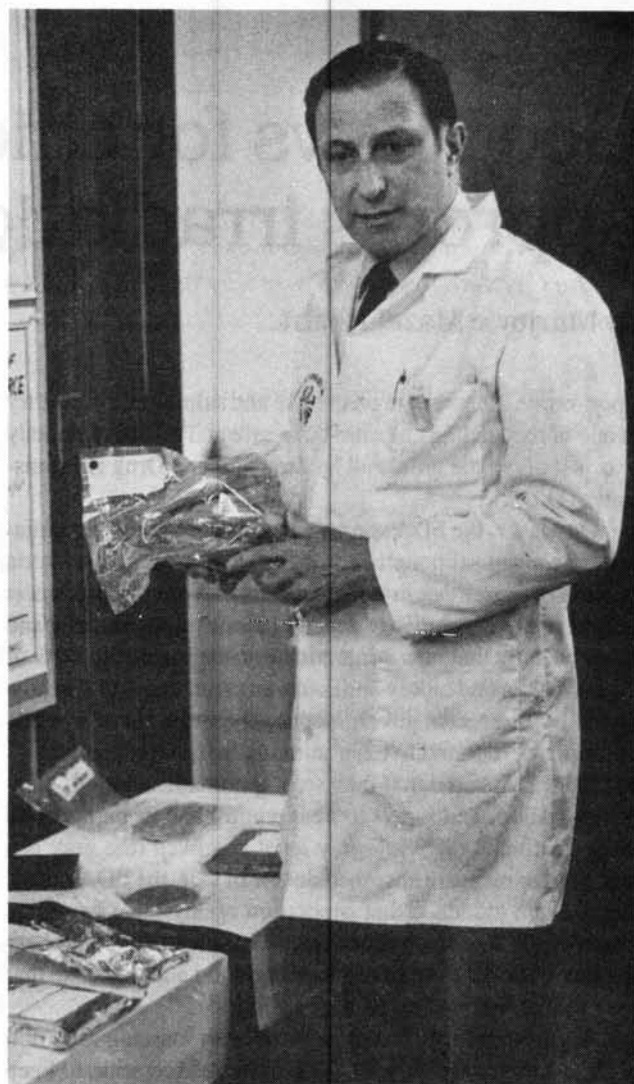
Welt feels that one factor in the final approval was the participation of the USDA, which recognized that there was no alternative to controlling salmonella and campylobacter in poultry. The USDA increased the scope of the initial petition to include radiation from an electron beam source and from x-rays, and also the inclusion of an environmental impact statement.

How fast can we commercialize?

How fast will the poultry industry commercialize irradiation? Welt thinks that the first use will be in prepared meals, fresh refrigerated dinners sold at grocery stores for people to take home and warm up. Also, Welt said, commercial use may result as poultry processors realize they may be involved in liability claims in salmonella cases.

The current approval for low-dose irradiation also opens the door for FDA approval of the high-dose petition specifically for prepared meals, submitted by Welt's company, Alpha Omega Technology, Inc. of Parsippany, New Jersey. A high radiation dose would eliminate all microbial activity in the food, creating a sterilized, shelf-stable product (no refrigeration required).

“The major beneficiaries of sterilized meals will be medical patients and ‘Meals on Wheels’ for the elderly. We are hopeful that the FDA will grant approval for AIDS patients,”



Martin Welt holding a radiation-sterilized chicken in 1984. Stored at room temperature in a sealed pouch, that same chicken would still be wholesome and tasty today.

Welt said. “Since 1975, there has been a special program to provide radiation-sterilized meals to cancer patients at the Fred Hutchinson Memorial Hospital in Seattle, and it has proved to be the best meal for immunosuppressed patients, because it ensures food safety. Even at three times the dose needed for sterilization, the nutritional content of irradiated meals is better than today's canned food. Further, similar radiation-sterilized diets have been supplied for the Space Shuttle astronauts.”

Welt's company has also petitioned the FDA to approve low-dose irradiation processing for raw fish and seafood, which was accepted for filing in the *Federal Register* on March 15, 1990. Experts contend that there is no other way to solve the problem of eliminating disease-causing pathogens in raw seafood products.