Finally, food irradiation

The coming year could see FDA approval, at last. Marjorie Mazel Hecht of Fusion *magazine reports.*

The year 1986 could launch the commercialization of food irradiation and an export boom for this new U.S. industry. A research program since the 1940s when the military began to investigate the possibilities of using low-level radiation to preserve food for troops, food irradiation at a level of 100 kilorads for fresh produce is about to get the final stamp of approval for commercialization from the Food and Drug Administration, while similar approval for commercial processing of pork at 100 kilorads is expected by early January.

Irradiation, the most researched food preservation technology, has the potential to increase the world's food supply by about 25%, simply by extending the shelf-life of food products and eliminating the insects and bacteria in food that lead to spoilage.

The technology has the full weight of the international scientific community attesting to the safety and wholesomeness of the product. In fact, the proposed new regulation by the FDA would allow an irradiation level that is only one-tenth the standard set by the international expert committee in 1981. And the prestigious U.S. Scientific Task Force on Wholesomeness of Foods Treated with Ionizing Energy, organized by the Council for Agricultural Science and Technology, in a report to be released shortly, has declared that "foods irradiated with doses up to an average dose of 58 kilogray [the equivalent of 5,800 kilorads] are safe and wholesome."

The House Agriculture Committee held hearings Nov. 18 on a bill that would reinforce and expand the proposed new FDA regulation. Called the Federal Food Irradiation Development and Control Act of 1985, H.R. 696, the bill was introduced by Rep. Sid Morrison (D-Wash.) and has a counterpart in the Senate, S. 288, introduced by Sen. Slade Gorton (D-Wash.). The bill amends the current Federal Food, Drug, and Cosmetic Act, adopted in 1958, to define food irradiation as a "process" instead of a "food additive." This latter label has erroneously implied that the radiation process adds something—radioactivity—to the food, which it does not (in the same way that a dental X-ray does not make one's teeth radioactive). The bill also sets up a Joint Operating Commission to coordinate research, encourage private investment, and educate the public. The bill requires national uniformity in the regulation of food irradiation.

Although, for nearly 40 years, the United States has led the world in research to establish the safety and wholesomeness of food irradiation, today the nation lags behind the rest of the world. Twenty-eight countries now have approved the process for 40 different foods, while here, the new regulation to permit irradiation of up to 100 kilorads for fresh fruits and vegetables has been debated by the Food and Drug Administration since 1981.

The regulation was transmitted from the FDA to Health and Human Services Secretary Margaret Heckler in November 1985, and it is expected that she will finalize it before she leaves her post to become ambassador to Ireland. Mrs. Heckler stated in February 1984, when the proposed FDA regulation was made public: "Thirty years of research on the irradiation process have shown that the proposed levels of irradiation are safe and nutritious. FDA's evaluations showed that foods irradiated as proposed have the same nutritional value as foods that were not irradiated. Now is the time to move forward with this promising technology."

Reportedly, the issue of labeling is holding up the final

publication of the FDA regulation. Some nations use a small symbol to designate a product processed with ionizing radiation, although many experts feel that since the process leaves no residue in the food product, no special label is necessary.

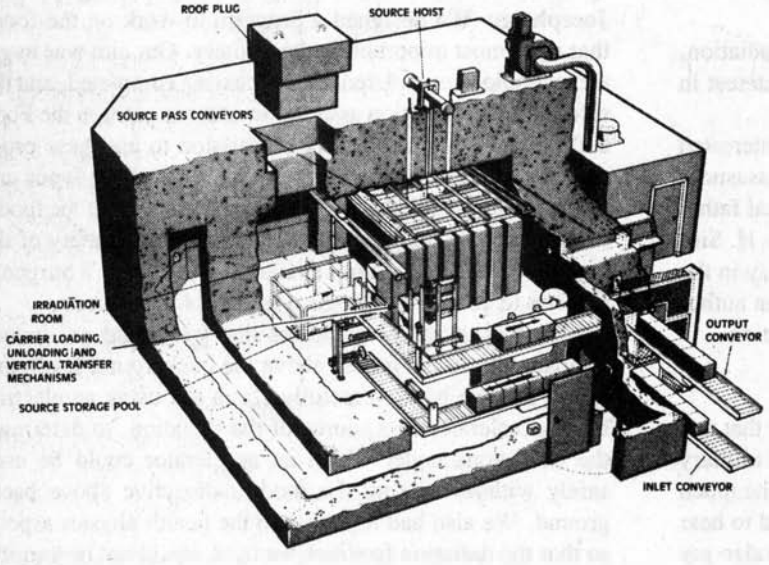
Food irradiation would revolutionize the food processing industry. Stored grain would stay insect-free; citrus fruits could be disinfested before shipping; sprouting would be inhibited in potatoes, onions, and garlic; bananas and other fruits would have their ripening process delayed; and salmonella, trichina, and other harmful organisms would be eliminated from meats.

In many developing-sector nations, where 50% to 60% of the food harvested or imported never reaches the consumer because of spoilage, the "conservation" of food by irradiation could mean the difference between life and death for a hungry population. In terms of grain alone, the amount lost to insects, rats, fungi, and so on is 33 million tons a year; an emergency program to stop starvation in Africa could succeed with just 17 million tons a year.

In addition to the support of the scientific community, 15 national organizations have backed the commercialization of food irradiation, including the American Medical Association, the American Farm Bureau, and the Grocery Manufacturers Association. Testifying Nov. 18 for H.R. 696 were scientists who pioneered the technology, food industry representatives, the American Medical Association, and the Fusion Energy Foundation.

Who would oppose such a beneficial technololgy? Testifying against the bill was an array of environmentalist groups whose allegations were all variations on "this is a plot of the nuclear weapons industry to poison the Third World." During the recess, the food processing association supplied hearing participants with Washington State apples that had been treated with low-level radiation as a disinfestation measure. One environmentalist shrieked, "I won't eat one; I won't be a human guinea pig."

How it works



Food irradiation uses the ionizing energy from a decaying radionuclide such as cobalt-60 or cesium-137 or from s-rays or electron beams as a source of radiation. The very short wavelength gamma rays penetrate inside solid particles and kill microorganisms by breaking down the cell walls, or destroying their metabolic pathways.

There is no radioactivity induced in the processed food. Since the chemical reaction caused by the gamma rays does not involve the atomic nuclei of the molecules, their atomic structure is not changed. The radiolytic products are the same as or similar to those in nonirradiated food. As the FDA put it, the difference between irradiated and nonirradiated foods is "so small as to make the foods indistinguishable in respect to safety."

Gamma irradiation is a "cold" process; that is, it produces no significant temperature increase in the food. So unlike canned foods, irradiated foods retain the same color, flavor, texture, and nutritional value.

Irradiation facilities: There is the radiation source with its shielding, an automatic conveyor system to transport the produce, control systems to manage the processing at the appropriate rate, and storage facilities.

In a typical facility, the cobalt-60 is embedded in pencil-thin rods, submerged in a well of water that shields the personnel from the radiation when the source is not in use. The area housing the gamma irradiation source is shielded with 6 to 8 feet of concrete. The products to be irradiated travel on conveyor belts to the source, which is automatically raised out of the water on cables when needed. The dose of radiation received depends on the time of exposure and also the product's distance from the source.

The capital cost of such a basic unit may be as much as $2 million, but the facility could be designed to handle both food products and medical supplies simultaneously, thus maximizing use of the equipment.