Some people confuse the term *irradiation* with *radiation*. They wonder, “If I eat irradiated food, will I glow in the dark?”

The answer is “no.” Eating irradiated food will not make a person glow in the dark! In fact, food irradiation makes food fresher and safer.

**What Is Food Irradiation?**

Food irradiation is a process that kills harmful microorganisms. It can make food stay fresh longer and be safer to eat.

Let’s consider fresh fruit as an example of how irradiation can make food stay fresh. The problem with fresh fruits is that they provide the kind of food that bacteria, yeast, and mold spores grow on very rapidly. Even though bacteria, yeast, and mold spores are so tiny that it takes a microscope to see them, you can see their effects on fruit even a day or so after harvest. Strawberries are a good example of a fruit that begins to go bad soon after harvesting.

Irradiation is a very simple process that will kill the microorganisms on the surface of fruits. It takes only a few minutes. An entire truckload of strawberries can be treated in 20 minutes. As you can see in Figure 1, irradiation makes a big difference in the quality of strawberries. Which strawberries would you rather eat? Most people think the treated ones look best. This is a good example of how irradiation keeps our food from spoiling so quickly. Irradiation helps strawberries stay good to eat.

Irradiation can also make food safer to eat. Raw meat, especially ground meat that we use for making hamburgers, supports bacteria. When meat is handled and cooked properly, the bacteria and other microorganisms are killed, and people stay healthy. If meat is not handled and cooked properly, the microorganisms continue to grow and can make people sick.

Some people become so sick from eating contaminated food that they die. This happened a few years ago when bacteria called *E. coli* 0157:H7 got into ground meat that was made into hamburgers and not cooked properly. The *E. coli* bacteria continued growing in the undercooked hamburgers. People who ate the hamburgers became very sick and several died as a result. If the ground meat had been irradiated before leaving the meat packing plant, the *E. coli* bacteria would have been killed.

Irradiation would also help us make other meats safer. Bacteria called *salmonella* are one of the most common causes of foodborne illness. *Salmonella* is found on all types of raw meat and poultry. These are foods that must be kept refrigerated, correctly handled, and thoroughly cooked so we will not get sick when we eat them. Irradiation of the raw meat and poultry products would help make sure that the raw meats we buy are safe when we leave the grocery store.

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**Figure 1.** Strawberries treated by irradiation.
Is Irradiation Safe?

Some people worry about the safety of food irradiation itself. Some people think that when food is irradiated, it will become radioactive. Then, when people eat it, their bodies will be exposed to radiation. Here are the facts:

- Irradiation has been around since 1895 when X-rays were discovered.
- One of the oldest forms of food preservation is sun drying. The sun’s rays that dry food are in the gamma ray range (see Figure 2). The gamma ray range happens to be the same range as the rays used to irradiate food.
- Only very low doses of gamma rays are required for irradiating foods, not nearly enough to make food radioactive.
- Irradiation does not substantially affect the nutritional value of food. Irradiation does not affect carbohydrates and proteins, and its effect on vitamins and minerals is very, very small.
- More than 30 countries have approved irradiation for food. The Netherlands, for example, has a reputation of having the safest food supply in the world.

- International organizations like Food and Agriculture Organization and the World Health Organization support food irradiation as a safe and desirable method for processing food.

So, is irradiation safe? Yes. Irradiation is a completely safe process. It will cause neither the food nor the people who eat irradiated food to become radioactive.

Figure 2. Types of radiation and electromagnetic energy.
How Does Irradiation Work?

The process of food irradiation is really very simple. Foods to be irradiated are loaded on a conveyor belt, taken into a room, and exposed to cobalt60 for a short time (see Figure 3). Some foods have to be exposed for a longer time than others. It just depends on the food. After the food is irradiated, a conveyor moves the food back to trucks waiting to deliver food to stores.

Cobalt60—the radiation source—kills living organisms. It kills the microorganisms that make food spoil or unsafe for people to eat. Direct exposure to large, prolonged doses of radiation would seriously injure and perhaps kill a person. However, handling or eating a food that has been exposed to a short, low dose of radiation is not harmful.

After irradiation, the food looks just as fresh as it did when it went into the irradiation room. Other ways of preserving food leave the food looking changed in some way. Canning makes food look cooked. Sun drying shrivels food. Salting, brining, or smoking also changes the way food looks.

Irradiation is a very simple, quick process that doesn’t change the way food looks. It keeps food looking fresh because it kills the microorganisms that cause food to rot and spoil. It also makes food safe to eat because it kills the microorganisms that can make people sick.

How Will I Know If Food Has Been Irradiated?

All irradiated foods must have a label like the one in Figure 4. This label gives consumers the choice of buying irradiated or non-irradiated foods. In cities where irradiated foods were test-marketed, people quickly learned to trust the benefits of irradiation. In spite of slightly higher prices, the irradiated foods outsold the non-irradiated ones in every situation.

Conclusion

Food irradiation is a process that kills harmful microorganisms. It can make food last longer and be safer to eat. Food scientists have a special term for this. It’s called “extending shelf life.”

Foods with an extended shelf life give consumers more choices from fresher, safer foods. And after all, that’s what the United States is all about—freedom of choice.

References


Ten most commonly asked questions about food irradiation. 1993. United States Department of Agriculture.

This publication was prepared by Jean Olds Weese, Extension Food Scientist, Assistant Professor, and Robin Fellers, Assistant Professor, both in Nutrition and Food Science at Auburn University.

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