

MYTH & FACTS ABOUT FOOD IRRADIATION

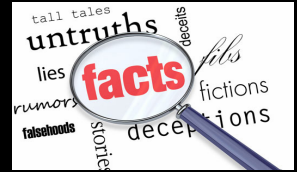
Myth

“Irradiation is a food additive.”

Reality:

Legally true. Technically false!

In 1958 the US Congress passed an Amendment to the Food, Drugs, and Cosmetic Act to address the safety of food additives. The Act directed the Food and Drug Administration to determine that an additive was safe before allowing its use in food.



Food Irradiation is the process exposing food to ionizing energy (accelerated electrons, gamma photons or x-ray photons). The radiation energy passes through the food. As the energy enters the product, it can: hit an electron of an atom, hit the nucleus of an atom or miss all of the atoms of the product. When it hits an electron, it can knock that electron off of the atom creating a chemical effect (ionization). When it hits an electron, some of the radiation energy is transferred to that electron and it also becomes an accelerated electron. If the radiation hits the nucleus of an atom, it will transfer all or part of its energy to that nucleus. Since the radiation does not have an energy level high enough to effect the nucleus of an atom, the nucleus is unaffected other than being shaken up a bit. The initial radiation and the electrons that were knocked off of the atoms will continue to pass through the product until they either impart all of their energy through collisions with electrons and nuclei; or fly out of the product and impart all of their remaining energy to the shielding of the irradiator.

Ultimately, all of the radiation energy is transferred to the product or the irradiator's shielding. As mentioned earlier, it transfers the high energy, from the photons or accelerated electrons, to shaking up the nuclei of the atoms it encounters along the way. A slightly more technical term for “shaking up” is “heating”. All of the radiation energy is converted to heat energy. Although the radiation energy is high enough to knock electrons off of the atoms (a chemical effect), it does not have enough energy to effect the nucleus of an atom and therefore cannot make an atom radioactive (a nuclear effect).

The net result is that the irradiation only leaves a small amount of heat in the food. (Typically raising the temperature around one degree for perishable foods).

Heat is not considered a food additive. Heating a food is considered a process. Therefore, technically food irradiation is a process and not an additive.

However, back in 1958, Congress realized that there was both a lot of interest in using radiation processing for food and concern over whether or not there were any safety issues regarding its use. Clearly, the irradiation process was not technically an additive, but the Act before them was specific to additives. They chose an overly simple solution...just legally define the irradiation process as an additive.

Irradiation is the only food process that has had to have its safety determined prior to commercial use. Many other food processes that we use every day, such as cooking, might not be approved using the same rigorous safety standards as those applied to irradiation.

So, I guess one could say: Irradiation - Pre-approved as a safe food additive without adding anything to the food.