

MYTH & FACTS ABOUT FOOD IRRADIATION



Myth: “It would take a huge dose of radiation, much more than is needed, to actually make food radioactive.”

Reality: This statement is incorrect. Food will not be made radioactive no matter how “huge” the dose.

“Dose” is the amount of radiation energy absorbed (quantity) in the product. Dose is measured in Grays. One Gray is equal to 1 joule per kilogram. As the radiation hits the molecules of food, the radiation energy is totally converted to heat energy (absorbed).

Similarly, if you put the same food in your household oven, the heat energy is transferred to the molecules of food. The heat energy absorbed could also be measured in joules per kilogram. No matter how much heat is applied to the food, an oven cannot make the food radioactive.

Thus the absorbed dose does not make food radioactive.

Something can be made radioactive by subjecting it to a type of radiation with specific qualities that can affect the nucleus of an atom. To avoid these, the FDA has limited the sources for irradiation that can be used on foods. Specifically four different types of radiation are used:

- 1). Cobalt-60 – A radioactive element that produces two gamma photons with discrete (cannot be changed) energies of 1.17 and 1.33 MeV. (Million electron Volts)
- 2). Cesium-137 – A radioactive element that produces one gamma photon with a discrete energy of 0.662 MeV.
- 3). Accelerated Electrons (Electron Beam) – Made in a machine that accelerates electrons (beta particles) to an energy not to exceed 10 MeV.
- 4). X-rays – Generated by taking accelerated electrons, which are not to exceed 7.5 MeV, and converting them into x-rays. (X-rays and gamma photons, at the same MeV, are identical. The only difference is how they are created.)

The qualities of the radiation and not the quantities of radiation will determine if something is made radioactive. To assure that food is not made radioactive, the FDA has limited the process to only four sources of radiation as described.

Russell N. Stein
GRAY*STAR, Inc.
www.GrayStarInc.com
GrayStarGenesis@aol.com

