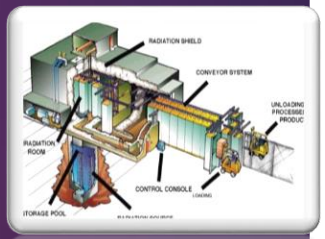
Tanta University
Faculty Of Science
Chemistry Department

Agricultural Applications of Radioisotopes

"Food Irradiation"



Supervised by :
Dr. Wael Amer

By :

- Mohamed Abd Elhamid Eldsouki
- Ahmed Mahmoud Abdo Resha

Agricultural Uses of radioisotopes

- Develop disease-resistant crops.
- Improve the nutritional value of crops.
- Show how plants absorb fertilizer, learn when to apply fertilizer and how much to use.
- Control insect populations by sterilization of male insects.
- Food and Environmental Protection

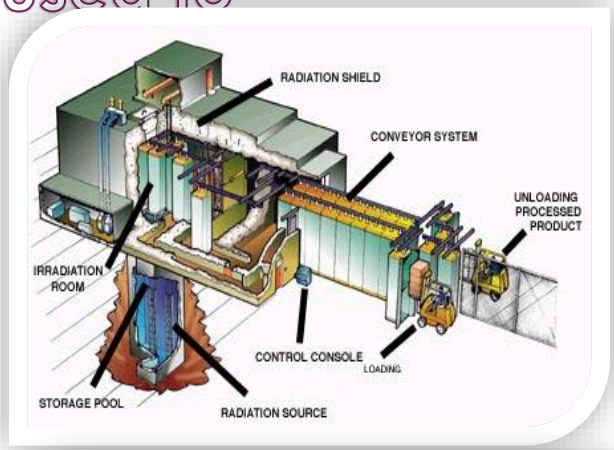
Food and Environmental Protection

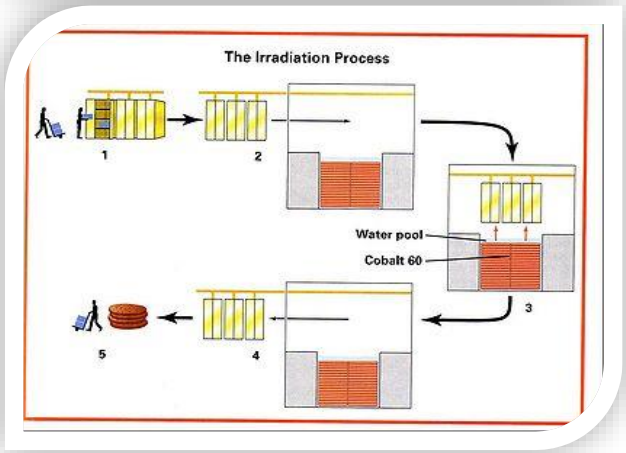
Technical basis

- Food irradiation is the treatment of food by ionizing radiation .
- Radiation at appropriate doses can kill harmful pests, bacteria, or parasites, and extend shelf-life of foods.
- Irradiation Does Not Heat The Food Material So Food Keeps Its Freshness In Its Physical State.
- Isotopic techniques are employed to monitor foods for contamination with agrochemicals :
  - optimizing sample preparation by radioisotopes
  - detecting contaminant by electron capture detector

Several energy sources can be used to irradiate food

- Gamma Rays
- Electron Beams
- X-rays



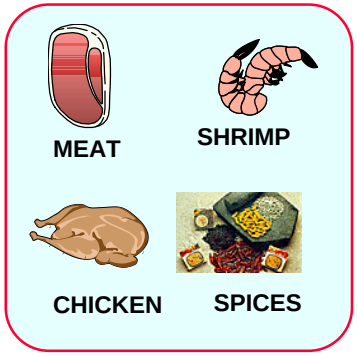


Application of Food Irradiation

- More than 60 countries permit the application of irradiation in over 50 different foods
- An estimated 500,000 tons of food are irradiated annually
- More and more countries accept the use of irradiation as a phytosanitary measure

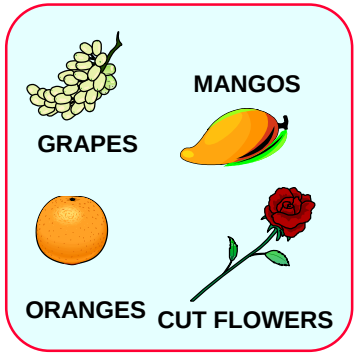
Food Irradiation

Codex General Standard for Irradiated Foods



ENSURE FOOD HYGIENE

OVERCOME QUARANTINE BARRIERS



FOOD SAFETY

TRADE