

## Irradiation - Did you know?

Every day irradiation is helping to save lives, maintain health and protect the environment.

- All over the world irradiation plants are operating safely and effectively, sterilizing the medical devices required by surgeons and other medical professionals for use in operations and other healthcare treatments. E.g. hypodermic syringes, needles, surgical gloves and gowns, dressings, implants, intravenous bags etc.
- The bottle teats used in many premature baby units are sterilized to remove any risk of infection at this critical stage of a premature baby's life.
- Artificial hips are sterilized prior to fitting to reduce the risk of infection and post-operative complications.
- Astronauts eat irradiated foods to avoid the risk of foodborne illness whilst they are on space missions.
- Food packaging is irradiated to reduce bacterial contamination and thus to prevent degradation of the contained foods. Typical examples are cartons for dairy products and fruit juices, and the nozzles of pressurised cream containers.
- Wine corks are irradiated to kill the moulds which cause 'corking' and hence spoil the wine.
- Dried herbs and spices are irradiated to kill the dangerous bacteria and insect pests with which they are very often contaminated.
- Throughout the world a wide variety of other foods are irradiated to reduce wastage, extend storage/shelf lives and to remove dangerous organisms which can cause illness and even death.

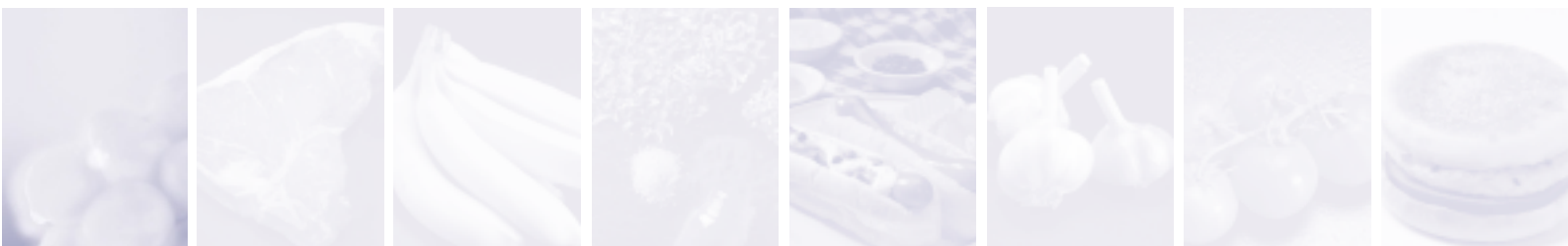
And in the future?

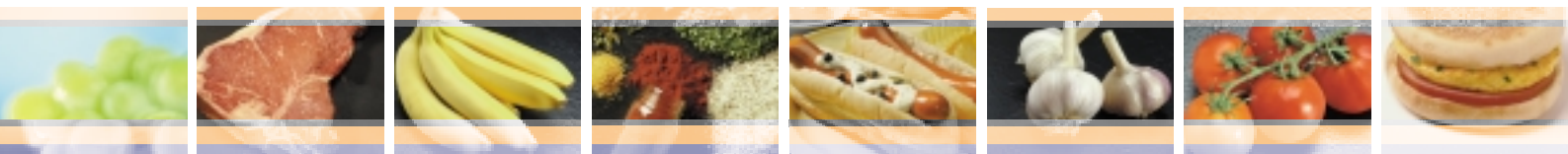
### Food safety

- Irradiation could be increasingly used to prevent food losses by reducing spoilage (deterioration of fruits and vegetables, sprouting of potatoes and onions) and wastage due to pests (grains and flours).
- Irradiation could be used to improve flavour and keeping qualities.
- Irradiation could be used to control dangerous organisms (pathogenic bacteria), particularly in meats and poultry - E. coli 0157:H7, Salmonellae, Campylobacter, Listeria, etc.
- Irradiation is able to provide an environmentally-friendly alternative to the use of methyl bromide gas for the quarantine treatment of fresh fruits and vegetables to kill flies and other pest infestations which could otherwise enter the importing country and destroy local crops. Methyl bromide is a Class 1 cancer causing agent which damages the ozone layer and is to be phased-out under the international Montreal Protocol agreement.

### Protecting the environment

- In The Netherlands, where the use of methyl bromide in horticulture has already been banned, irradiation is used by operators of greenhouses to sterilize such items as growing mats, planting pots, etc. This enables recycling of these products bringing significant cost savings to the growers and reducing the amount of plastic material for disposal.
- Irradiation provides a practical method of treating municipal and agricultural wastes to prevent land and waterways contamination and to enable recycling. Recycled material could be used in horticulture as an alternative to peat, thus helping to preserve peat bogs from unnecessary over-exploitation.
- Irradiation could be used to detoxify industrial effluents preventing contamination of inland and coastal waters and sickness and death of animals.





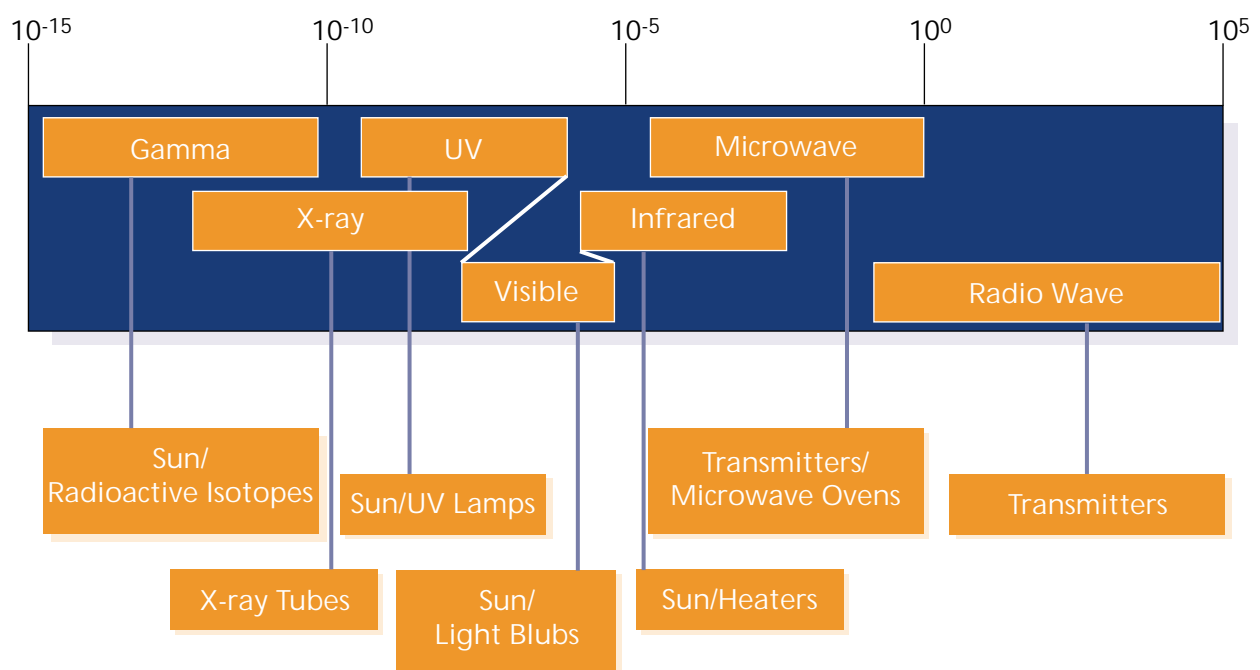
Definition: The Cassell Concise Dictionary

“Irradiate” v.t. to subject to sunlight or ultraviolet rays.

“Irradiation” n. the process of exposing (food) to low levels of gamma radiation to kill bacteria.

The sun, light bulbs, electric fires, microwave ovens, and radio or television transmitters are all sources of electromagnetic radiation that is all around us every day of our lives.

### Radiation Wavelength /metres



The source of visible light in a fluorescent light bulb is free electrons. By looking at visible light generated in this way we are not contaminated by the electrons contained in the glass envelope. Similarly, products irradiated with gamma radiation from a cobalt-60 source are not contaminated with the radioactive material contained in a steel tube.

In the electromagnetic spectrum gamma radiation has the highest energy of all. It is most effective as a means of killing micro-organisms that would otherwise be detrimental to our well being. The level of exposure of a product to gamma radiation controls the degree of purification with results ranging from complete sterilization in the case of medical devices to pasteurization in the case of food.

For more information about how irradiation can help to protect you and your environment, please contact us.

PURIDEC Irradiation Technologies  
 6 Chiltern Court, Asheridge Road  
 CHESHAM, Buckinghamshire, England HP5 2PX  
 Tel: +44 (0)1494 777444  
 Fax: +44 (0)1494 777457  
 E-mail: PURIDEC@REVISS.co.uk  
 Website: <http://www.puridec.co.uk>

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