

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1478
TO BE ANSWERED ON 19.12.2018

IMPACT OF RADIATION ON FOOD PRODUCTS

1478. SHRI DHARAMBIR:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government proposes to use radiation technology for processing and storage of agricultural produce and if so, the details thereof;
- (b) whether any primary report has been prepared by the Government regarding impact of radiation on food products; and
- (c) if so, the details and the outcome thereof?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH):

- (a) Yes, Sir. Extensive research work has been carried out by the Department of Atomic Energy (DAE) on the use of radiation processing for extending shelf life of agricultural produce/ food products over the last 50 years. Radiation processing and proper storage thereafter has achieved substantial increase in shelf life of many agricultural produces including tubers, fruits, vegetables, cereals, pulses, spices, sea foods and meat products due to effective elimination of harmful and spoilage microorganism, viruses and insects/pests from foods.

Based on this technology, two Government irradiation facilities were established by Bhabha Atomic Research Centre (BARC) at Lasalgaon, Nashik, and Vashi, Navi Mumbai. Govt. of Maharashtra and Govt. of Gujarat also established two facilities for the welfare of the farmers at Vashi, Navi Mumbai and Bavala respectively. In addition, 11 private facilities have been established at different parts of the country. The details of the radiation processing plants are given at **Annexure-1**.

- (b) Yes, Sir. Harmonization of food irradiation rules with the international regulation through adaptation of class wise clearance of irradiated food items by the Food Safety and Standards Authority of India (FSSAI) has taken place through Food Safety and Standards (Food Products Standards and Food Additives) Sixth Amendment Regulations, 2016. This has categorized different food items and the purpose of radiation.
- (c) FSSAI notified “Food Safety and Standards (Food Product Standards and Food Additives) Sixth Amendment, 2016 and the Food Safety and Standards (Packaging and Labelling) Fourth Amendment, 2016” related to standards and labelling requirements for irradiated foods. The implementation of the amendment starts from the date of its final publication in the Official Gazette, i.e. August 23, 2016. The full text of the final amendment as published in the Gazette is also available on the website of FSSAI (<http://www.fssai.gov.in/>). Radiation processing dose limits for different food products grouped in different classes and allied products are given in **Annexure-2** and **Annexure-3** respectively.

RADIATION PROCESSING PLANTS IN INDIA

S. No.	Name of the Plant	Purpose	Status/ Remarks
1	Radiation Processing Plant, BRIT, Vashi, Navi Mumbai, Maharashtra	Spices, Herbs and allied products	Commissioned in 2000
2	KRUSHAK Irradiator, Lasalgaon, Nashik, Maharashtra	Mango, Potato, Onion, Vegetables, Fruits and Grains	Commissioned in 2002
3	M/s. A.V. Processors Pvt. Ltd., Ambernath (E), Thane, Maharashtra	Food & Medical Products	Commissioned in 2005
4	Maharashtra State Agricultural Mktg. Board, Navi Mumbai, Maharashtra	Mango, Vegetables, Fruits, Grains and Packaged food	Commissioned in 2015
5	M/s. Agrosurg Irradiators, Vasai, Thane, Maharashtra	Spices, Herbs and allied products, Packaging & Medical Products	Commissioned in 2008.
6	M/s. Hindustan Agro Co-Operative Ltd., Rahuri, Ahmednagar, Maharashtra	Onion & Other Agricultural Produces	Commissioned in 2012
7	M/s. Organic Green Foods Ltd., Dankuni, Kolkata, West Bengal	Food, Packaging & Medical Products	Commissioned in 2004
8	M/s. Universal Medicap Ltd., Vadodara, Gujarat	Food & Medical Products	Commissioned in 2005.
9	M/s. Gujarat Agro Industries Corpn. Ltd, Bavla, Ahmedabad, Gujarat	Spices, Herbs and allied products, Food Products	Commissioned in 2014
10	M/s. Microtrol, Bangalore, Karnataka	Spices, Herbs and allied products, Food & Medical Products	Commissioned in 2006
11	M/s. Innova Agri Bio Park Ltd., Malur, Dist. Kolar, Karnataka	Mango, Food & Medical Products	Commissioned in 2011
12	M/s. Jhunsons Chemicals Pvt Ltd., Bhiwadi, Rajasthan	Spices, Herbs and allied products, , Medical & Packaging Products	Commissioned in 2010
13	M/s. Gamma Agro Medical Processing, Hyderabad, Telangana	Spices, Food & Medical Products	Commissioned in 2008.
14	M/s. Impartial Agro Tech (P) Ltd., Unnao, Lucknow, Uttar Pradesh	Spices, Food & Medical Products	Commissioned in 2014
15	M/s. Aligned Industries, Dharuhera, Rewari, Haryana	Spices, Food Products	Commissioned in 2015

Classes of food products and dose limits (kilo Gray) for radiation processing

Class	Food	Purpose of Treatment	Min	Max
Class I	Bulbs, stem and root tubers	Inhibit sprouting	0.02	0.2
Class 2	Fresh fruits and vegetables (other than Class 1)	Delay ripening Insect disinfection Shelf-life extension Quarantine application	0.2 0.2 1.0 0.1	1.0 1.0 2.5 1.0
Class 3	Cereals and their milled products, pulses and their milled products, nuts, oil seeds, dried fruits and their products	Insect disinfection Reduction of microbial load	0.25 1.5	1.0 5.0
Class 4	Fish, aquaculture, seafood and their products (fresh or frozen)	Elimination of pathogenic microorganisms Shelf-life extension Control of human parasites	1.0 1.0 0.1	7.0 3.0 2.0
Class 5	Meat and meat products including poultry (fresh and frozen) and eggs	Elimination of pathogenic microorganisms Shelf-life extension Control of human parasites	1.0 1.0 0.3	7.0 3.0 2.0
Class 6	Dry vegetables, spices, condiments, dry herbs, tea, coffee, cocoa and plant products	Elimination of pathogenic microorganisms Insect disinfection	6.0 0.3	14.0 1.0
Class 7	Dried food of animal origin	Insect disinfection Control of moulds Elimination of pathogenic microorganisms	0.3 1.0 2.0	1.0 3.0 7.0
Class 8	Ethnic foods, military rations, space foods, RTC/RTE, minimally processed foods	Quarantine application Reduction of microorganisms Sterilization	0.25 2 5	1.0 10 25

Dose Limits for Radiation Processing of Allied Products

S. No.	Allied product	Purpose	Dose limits (kilo Gray)	
			Min	Max
1	Animal food and feed	Insect disinfestation	0.25	1.0
		Microbial decontamination	5.0	10.0
2	Ayurvedic herbs and their products, and medicines	Insect disinfestations	0.25	1.0
		Microbial decontamination	5.0	10.0
		Sterilization	10	25
3	Packaging materials for food/allied products	Microbial decontamination	5.0	10.0
		Sterilization	10	25
4	Food additives	Insect disinfestations	0.25	1.0
		Microbial decontamination	5.0	10.0
		Sterilization	10	25
5	Health foods, dietary supplements and nutraceuticals	Insect disinfestation	0.25	1.0
		Microbial decontamination	5.0	10.0
		Sterilization	10	25
6	Body care and cleansing products	Microbial decontamination	5.0	10.0
		Sterilization	10	25
7	Cut flowers	Quarantine application	0.25	1.0
		Shelf-life extension	0.25	1.0