

**GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA**

UNSTARRED QUESTION NO:237

ANSWERED ON:23.11.2011

IRRADIATION TECHNOLOGY

Mahato Shri Narahari; Roy Shri Nripendra Nath

Will the Minister of ATOMIC ENERGY be pleased to state:

- (a) whether the Government has formulated any strategy for use of irradiation technology for food preservation;
- (b) if so, the details thereof;
- (c) whether the Government has conducted any research to ascertain the utility to be derived from irradiation in the field of food preservation;
- (d) if so, the results thereof;
- (e) the number of radiation processing plants set up both in public and private sector in the country during each of the last three years, State-wise; and
- (f) the steps taken to augment the use of this facility in the country?

Answer

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)

(a) Yes, Sir.

(b) BARC has been engaged in R&D work on the technology of preservation and hygeinisation of food by radiation for the past more than 50 years. The safety and wholesomeness of the technology was endorsed in 1981 by world bodies like World Health Organization, Food & Agricultural Organization, International Atomic Energy Agency, and in 1983 by the Codex Alimentarius Commission that sets global standards for food. Government of India constituted a National Monitoring Agency in 1987 to oversee commercial application of food irradiation in India. Subsequently, in 1991, Atomic Energy Act was amended and Atomic Energy (Control of Irradiation of Food) Rules, 1991 were established. These rules were subsequently amended in 1996. In 1994, Ministry of Health & Family Welfare amended Prevention of Food Adulteration (PFA) Act rules to approve radiation processing of onion, potato and spices. The PFA Act rules were further amended in 1998 and 2001 to approve additional items of food. Ministry of Health & Family Welfare was approached by the department for approval of the food and agricultural commodities on wider generic/ class-wise basis for radiation processing, so that the radiation processing plants could process more agricultural commodities and be operated around the year for better economic gains. The draft notification for generic approval on class basis was published by the Ministry of Health for public review in May 2007. The Atomic Energy (Control of Irradiation of Food) Rules, 1996, under the Atomic Energy Act are currently under review in this respect with a similar intent. Department of AYUSH, Ministry of Health & Family Welfare, Government of India, have also given permission for use of radiation technology for microbial decontamination of medicinal herbs and formulations.

The Department of Atomic energy has the necessary expertise and know-how for setting up radiation processing plants. It has set up two technology demonstration units, one commissioned in the year 2000 for high dose irradiation at Vashi, Navi Mumbai, primarily for hygeinisation of spices, and another in 2002, a low dose irradiation facility, KRUSHAK at Lasalgaon, near Nashik, for sprout control during storage for potato and onion and insect disinfestation of agricultural commodities. The facilities are being operated by the Board of Radiation & Isotope Technology.

In 2004 as a result of persistent efforts of the department, the Ministry of Agriculture & Co-operation, Government of India, amended the plant quarantine regulations, Plant Quarantine (Regulation of Import into India) Order, 2003, to include irradiation as a phytosanitary treatment. In 2006, the United States Department of Agriculture and Department of Agriculture & Co-operation, Government of India, signed a Framework Equivalency Work-plan, to use irradiation as phytosanitary measure for the export of mango to the US, and the USDA-APHIS final rule 'Importation of Mangoes From India' was published on March 12, 2007. More than 157 tonnes of mangoes of different varieties were processed at KRUSHAK and exported to US after a gap of 18 years. A landmark breakthrough was thus achieved in demonstrating commercial feasibility of radiation technology in overcoming quarantine barrier to international trade and obtaining market access. In 2008 the volume of export of mango to US almost doubled to 275 tonnes. In 2009 about 130 tonnes of mangoes were processed and exported to US. A trial consignment of 14.5 tonnes of irradiated mango has been sent to US by sea route to test the feasibility of shipping mango in order to reduce freight costs and make Indian mango cost competitive in the US market. This KRUSHAK facility is being commercially used by Maharashtra State Agricultural Marketing Board

(MSAMB) under a tripartite MoU between BARC/BRIT and MSAMB, and approved for irradiation of mango for export to USA. The facility has recently been upgraded to increase its products range. MSAMB has exported nearly 200 tonnes of mango to USA for the past two years.

(c) Yes, sir.

(d) As indicated in Part (b), Food Technology Division (FTD) in BARC has been engaged in R&D work on the technology of preservation and hygeinisation of food and agricultural commodities by radiation since 1950's. Initial two decades were spent on laboratory research on preservation of primary agricultural and horticultural commodities by using radiation technology. This was followed by large-scale studies with agencies like Food Corporation of India, and NAFED (Now NHRDF). In the intervening period considerable research effort was put in studying the wholesomeness and nutritional adequacy of irradiated foods to answer safety concerns related to consumption of irradiated foods. All studies carried out in BARC and other laboratories around the world found no adverse effects of consumption of irradiated foods. All these studies including those from BARC led to approval of this technology at the international and national levels.

The department is continuing to support R&D in this field. In the past decade a number of new products and processes have been developed for shelf life extension of food products, improving food safety, and for overcoming quarantine restrictions in international trade.

(e) No radiation processing plant has been set up in public sector during the last 3 years. The department has set up two technology demonstration plants one for high dose applications like microbial decontamination of spices and dry ingredients in Vashi, Navi Mumbai, commissioned in the year 2000, and another for low dose applications like sprout control in onion and potato, disinfestations of cereals and quarantine treatment at Lasalgaon, near Nasik in Maharashtra commissioned in the year 2002. Since then the department has encouraged private entrepreneurs to set up such facilities.

The details of radiation processing plants set up in private sector during the past 3 years are given below:

Maharashtra: 2

Hindustan Agro Co-operative Ltd., Rahuri, Ahmednagar (2011) Agrosurg Irradiators Pvt. Ltd., Mumbai (2009)

Karnataka: 2

Innova Agri Biopark Ltd., Bengaluru (2011) Microtrol Sterilization Services Pvt Ltd., Bengaluru (2009)

Rajasthan: 1

Jhunsons Chemicals Pvt. Ltd., Bhiwadi, Rajasthan (2010)

(f) The Department of Atomic Energy has the requisite expertise and know-how for setting up radiation processing plants. The department is helping entrepreneurs interested in setting up radiation processing facilities by way of advice on the technology and engineering aspects. While BARC helps with the technology, BRIT supplies the cobalt-60 source and advises on engineering, dosimetry and regulatory aspects. The entrepreneurs need to sign an MoU with BRIT for this purpose. Financial assistance is available from other agencies of the Government like MoFPI and TDB.