GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO-4327
ANSWERED ON 02/04/2026

RADIATION FACILITIES

4327. SHRI NARAYANA KORAGAPPA

Will the PRIME MINISTER be pleased to state:-

(a) the number of electron beam processing and radiation sterilisation facilities established as of February 2026 with their location and operational status;
(b) the major sectors in which such facilities are currently utilised;
(c) the volume of medical devices, pharmaceuticals, and agricultural or food products processed through such facilities as of February 2026;
(d) whether such facilities are being operated in collaboration with public sector, private industry or research institutions?
(e) if so, details thereof?
(f) the benefits achieved through the use of radiation processing technologies, particularly in terms of improved food safety, reduction in post-harvest losses, and availability of sterilised medical products.

ANSWER

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

(a) Two electron beam processing and radiation sterilization facilities established by the Department of Atomic Energy (DAE) as of February 2026 as under :

(i) Electron beam radiation processing facility at Indore, Madhya Pradesh named "Agricultural Radiation Processing Facility" (ARPF):
The facility is based on 10 MeV, 6 kW electron linear accelerator (LINAC) developed by Raja Ramanna Centre for Advanced Technology (RRCAT), a Constituent Unit of DAE and is being operated on commercial basis for

electron beam terminal sterilization of medical devices. ARPF is licensed by the Atomic Energy Regulatory Board (AERB) for regular operation. Electron beam sterilization of Risk Class A and B medical devices at this facility is done by compliance with the process control requirement of IS/ISO 11137 standard and Medical Device Rules (MDR), 2017, under a license issued by the Food and Drugs Administration (FDA), Government of Madhya Pradesh. The Quality Management System of the facility is regularly audited by a Central Drugs Standard Control Organization (CDSCO) Notified Body and is accredited to ISO 13485:2016 and ISO 9001:2015 standards.

(ii) Electron beam radiation processing facility at Bengaluru, Karnataka : This facility is established at Bengaluru under an agreement with Incubation Centre, RRCAT, Indore and an Industry. RRCAT has developed, installed, commissioned and qualified a 10 MeV, 10 kW electron linear accelerator (linac), "KIRTI-1010" for sterilization of medical devices. Application to obtain license for commercial sterilization medical devices has been submitted to CDSCO which is under review at Karnataka State Licensing Authority.

(b) The facility is primarily being utilized in health care sector (medical device sterilization).

(c) Process qualification for e-beam sterilization of various medical devices (IV cannula, PP vials, blood collection tubes, surgical gloves, viral transport media tubes, collagen sheets, surgical syringe, collagen gauze pieces etc.) has been successfully completed. Medical device manufacturers from across the country are availing of the e-beam services, and as of February 2026, more than two crore medical devices have been sterilised.

(d) & (e) Out of two facilities developed by DAE, one is operated by RRCAT and another by private industry.

- Electron beam facility established at Indore, Madhya Pradesh is operated by RRCAT, DAE, Indore.
- Electron beam facility established by RRCAT at Bengaluru, Karnataka is operated by private industry under the Incubation agreement between RRCAT and Industry.

(f) DAE is involved in R&D activities pertaining to the development of Standard Operating Procedures (SOPs) for preserving different agricultural produce commodities using ionizing radiation including electron beam and X-radiations from accelerator. Bhabha Atomic Research Centre (BARC), a Constituent Unit of DAE, developed radiation technologies extend the shelf life of perishable agricultural produce and prevent post-harvest losses for ensuring food security. It also helps Indian exporters to meet international quarantine requirements for export of such commodities, thereby enabling access to high-value markets. Notably, the shelf life of onion and potatoes has been extended up to 7.5 months and 8 months respectively, while retaining the quality attributes. India has been exporting mangoes and pomegranate through sea route in a cost-effective manner to the United States of America (USA), Australia, South Africa and Malaysia using irradiation as a mandatory phytosanitary treatment. SOPs have also been developed for shelf-life extension of cereals, wheat, spices, mushroom, fruits and vegetables such as green tomato, broccoli, cherry fruits, semi dried apricot etc., benefiting farmers, traders and consumers. Radiation processing also enables chemical-free preservation of grains and spices by eliminating insects and microbes. The radiation based food preservation technology has been transferred to private entrepreneurs on non-exclusive basis for commercialisation. At present 32 commercial food irradiation facilities utilizing Cobalt-60 are operational across the country which includes seven plants by Central / State Government Sector and 25 by private firms.

A high-power (10 MeV, 15 kW) food irradiation linear accelerator has been developed at RRCAT, Indore. The LINAC has been qualified for irradiation of food and agricultural products. Various R&D experiments are conducted in collaboration with various research institutes and universities (BARC-Mumbai,

Indira Gandhi Krishi Vishwavidyalaya (IGKV)-Raipur, Indian Council of Agricultural Research (ICAR) institutes, Central Agricultural Univesity-Manipur, etc.) to develop the new crop varieties in Groundnut, Chick pea, Lobia, Field Pea, Rice, Barnyard Millets, Garlic, Finger millet, Pearl millet, Sorghum, Foxtail millet and explore the use of electron beam technology to improve food safety, reduction in post-harvest losses and quarantine treatment in Guava, Grapes, Potato and tribal food products like kodu, kutki etc., in collaboration with BARC-Mumbai, Jawaharlal Nehru Krishi Vishwavidyalaya (JNKVV)-Jabalpur, DRDO-Defense Food Research Laboratory-Mysore.

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