GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.323
TO BE ANSWERED ON 22.07.2021

INDIGENOUS DEVELOPMENT OF NUCLEAR SECTOR

323. DR. AMEE YAJNIK:

Will the PRIME MINISTER be pleased to state:

(a) the details of sectors that got benefited by research and development in atomic energy during the last three years, the details thereof;

(b) initiatives taken to reduce the pressure on non-renewable source of energy in the field of power generation;

(c) technological advancement adopted or indigenous development in nuclear sector to reduce the impact of radiation; and

(d) if so, the details thereof?

ANSWER

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

(a) Following sectors are benefited by research and development in atomic energy.

Health- Fluorine-18(FDG), Gallium-68, Thallium-201 and Ruthenium-106 have been developed for treatment of cancer. A stand-alone, field-usable optical spectroscopy based point-of-care device "OncoDiagnoScope" for instant non-invasive diagnosis of oral cavity cancer has been developed. A low cost and compact fluorescence imaging device "TuBerculoScope" for rapid detection of tuberculosis have been developed.

Agriculture-Four rice varieties, one cowpea variety, one linseed variety and one mustard variety developed by mutation breeding using irradiation. Developed new research reactor named Apsara Upgraded for carrying out studies for various nuclear technologies and for production of radioisotope. Developed a liquid nitrogen based refrigerated container for cold transport facility. Agricultural Radiation Processing Facility (ARPF) is established at Indore for societal applications of electron beam processing. The facility is licenced by AERB and FDA for radiation processing of medical devices. It is

also available for providing services for mutation breeding of new crop varieties, food preservation, improvement in functional properties of semiconductors switching devices, color modification of gems, damage assessment of solar cells and other sensors for research in space applications.

Industry- Technologies such as, RFID base Hand Held Reader, Digital Nano Ammeter, Digital Pico Ampere Meter etc developed and transferred to industrial Sector.

Power-Nuclear Power Plants with the nuclear power capacity of 6780 MW are operational.

National Security- Developed Bullet Proof Jackets known as Bhabha Kavach.

Waste Management-Radiation technology has been developed and deployed for treatment of Municipal dry sludge. Municipal dry sludge is hygienised using gamma radiation.

(b) Nuclear power is clean & environment friendly source of base load power available 24X7. The life cycle emissions of Green House Gases (GHGs) as gram CO_2equivalent per kWh of nuclear power are comparable to renewable such as Hydro, Wind etc. Nuclear power expansion programme is planned to increase the present installed nuclear power capacity of 6780 MW to 22480 MW by 2031.

(c) Environmental Survey Laboratories (ESLs) and Health Physics Laboratories equipped with state-of-the-art monitoring systems have been established to ensure the protection of public and the environment around all Nuclear Power Plant sites.

(d) Indian Environmental Radiation Monitoring Network (IERMON): More than 500 monitoring systems have been installed across all over India including all the Nuclear Power Plant sites for early detection and warning for taking appropriate corrective measures.

Aerial Gamma Spectrometry Systems (AGSS): developed for the quick assessment of radiological impact over a large area in case of an accidental release to assist in decision making.

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