GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
**RAJYA SABHA**
**UNSTARRED QUESTION NO.1766**
TO BE ANSWERED ON 22.12.2022

**Application of nuclear technology in the fight against cancer**

1766 Smt. Jebi Mather Hisham:

Will the PRIME MINISTER be pleased to state:

(a) whether Government has taken effective measures to use nuclear techniques to fight cancer, details thereof;

(b) whether Government has taken adequate steps to encourage Research and Development in nuclear medicine, especially in diagnosis, cure and prevention of cancer, details of spending over the last five years;

(c) whether India participated in the World Cancer Congress-2022 in which International Atomic Energy Agency (IAEA) highlighted the key role of partnership and nuclear technology in the fight against cancer, details thereof; and

(d) whether Government will set up a hi-tech cancer institute in Kerala, under the aegis of Department of Atomic Energy, details thereof?

**ANSWER**

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

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(a) Yes Sir.

The Department has been continuously putting in R&D efforts in development of radiopharmaceuticals & machines for cancer treatment.

Details of some of the efforts taken are as follows :

(i) Nuclear isotopes are used in Diagnosis and therapy as Nuclear Medicine. More than 60% of works with isotopes are towards cancer care, for diagnosis, response evaluation, treatment end response evaluation and suspected recurrence.

(ii) Bhabhatron an indigenous tele-cobalt machine developed for cancer treatment with High Source Capacity.

(iii) Developed technologies for partitioning of radioactive residue (waste), enabling recovery of useful radio-isotopes such as Yttrium-90 and Ruthenium-106 for cancer treatment.

(iv) Production of FDG using Medical Cyclotron for Cancer diagnosis and management.

(v) Three new radiopharmaceuticals based on lutetium-177 radioisotope developed for Cancer treatment.

(vi) Two new Gallium-68 based radiopharmaceuticals developed for diagnosis of cancer.

(vii) Targeted Alpha radionuclide Therapy with Actinium -225 labelled radiopharmaceuticals started.

(viii) Barchytherapy, a branch of Radiation Therapy uses isotopes for delivering radiation in a small area of disease.

(ix) Isotopes used in Blood irradiators and for sterilizing Tissues and Integuments.

(b) Dedicated Large nuclear medicine centres are set up by the Department at Mumbai, Varanasi, Visakhapatnam and Kolkata. Nuclear medicine Facilities have a minimum of one PETCT, one SPECT-CT, high dose therapy wards and accessories required for the same. The cost for setting up of these facilities is between Rs.16 to Rs.30 Cr. Conducive eco-system is provided at BARC for carrying out R&D projects to develop new radiopharmaceuticals for diagnostics, therapy and theranostic purposes. Around Rs.100 Cr have been spent over last five years in R&D projects with average of Rs.20 Cr per year.

(c) Department had participated in the World Cancer Congress with representatives from Tata Memorial Centre. The Department through Tata Memorial Centre works closely with the IAEA in several collaborative projects involving nuclear technology in cancer care.

(d) At present, there is no plan of the Department of Atomic Energy to set up a cancer centre in Kerala.

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