

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1065
TO BE ANSWERED ON 2.3.2016

EXTRACTING CAESIUM-137

1065. SHRIMATI MAUSAM NOOR:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Bhabha Atomic Research Centre has developed a process for extracting high value elements like Caesium-137 from the waste produced by nuclear power plants and if so, the details thereof;
- (b) whether Caesium-137 derived is used in blood-irradiator devices;
- (c) if so, whether the Government has decided to take the technological advancement of commercial applications;
- (d) if so, whether the Government proposes to chart out a detailed plan for harnessing various safe derivatives from nuclear waste for commercial applications; and
- (e) if so, the details thereof and the progress made in this regard, so far?

ANSWER

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

- (a) Yes Sir, Bhabha Atomic Research Centre (BARC), a constituent unit of Department of Atomic Energy (DAE) has developed a process for extracting Caesium-137 from the High level radioactive waste produced during reprocessing of spent fuel generated from nuclear power plants. Bhabha Atomic Research Centre has developed novel extractants and solvent extraction process using these extractants for the recovery of Caesium-137 from High level radioactive waste. The recovered Caesium-137 is converted into non-dispersive glass form through a process called vitrification. The vitrified Caesium-137 is then encapsulated in Stainless Steel pencil to be used as an external irradiation source for medical application such as blood irradiator.

- (b) Yes, Sir. The derived Caesium-137 in non-dispersive glass form encapsulated in Stainless Steel pencil is given to Board of Radiation & Isotope Technology (BRIT), a Industry Sector Unit of DAE which is the nodal agency for the supply of irradiation source to the hospitals and industries. BRIT supplies the Caesium pencils for blood-irradiator devices to hospitals. This has been accomplished first time in the world by India.
- (c)&(d) Yes, Sir.
- (e) Ceasium-137 has been recovered in large quantity from nuclear waste and deployed for blood irradiator. Extraction of isotope Stronium-90 from nuclear waste could be demonstrated at laboratory scale using indigenously developed novel extractants. Stronium-90 has been extracted in small quantity and deployed for generation of Ettrium-90, which is used for radiotherapy. The novel extractant is being manufactured in bulk amount to recover Stronium-90 in larger quantity for its utilisation as heat source in space applications also.
