

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1503
TO BE ANSWERED ON 19.12.2018

NUCLEAR WASTE MANAGEMENT SYSTEM

1503. SHRIMATI RITI PATHAK:
SHRI JUGAL KISHORE:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government has any transparent or comprehensive nuclear waste management system;
- (b) if so, the details thereof;
- (c) if not, the reasons therefor; and
- (d) the new steps taken by the Government to set up a balanced and transparent nuclear waste management system?

ANSWER

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

- (a) Yes, Sir.
- (b) Safe management of nuclear waste has been accorded high priority right from the inception of our nuclear energy programme. A comprehensive radioactive waste management system is established taking into account the operational capability for the management of radioactive waste and an independent regulatory capability for its overview.

As a waste management philosophy, no waste in any physical form is released / disposed of to the environment unless the same is cleared, exempted or excluded from regulations. Nuclear waste in the form of gaseous, liquid and solid is generated during operation & maintenance activities of nuclear power plants. A brief summary of the process being adopted for management of the nuclear wastes arising from nuclear power plant is given below.

1. Gaseous waste is treated at the source of generation. The techniques used are adsorption on activated charcoal and filtration by high efficiency particulate air filter.

2. Liquid waste streams are treated by various techniques, such as filtration, adsorption, chemical treatment, evaporation, ion exchange; reverse osmosis etc. depending upon the nature, volume & radioactivity content.
 3. The radioactive solid wastes generated during operation and maintenance of nuclear power plants are segregated and volume reduced prior to its disposal. Disposal of waste is carried out in specially constructed structures such as stonelined trenches, reinforced concrete trenches and tile holes. These disposal structures are located both above and underground in access-controlled areas and are designed based on multi-barrier principle for ensuring effective containment of the radioactivity. The areas where the disposal structures are located are kept under constant surveillance with the help of bore-wells laid out in a planned manner by routinely monitoring the underground soil and water samples to confirm effective confinement of radioactivity present in the disposed waste.
 4. High level radioactive waste generated during reprocessing of spent fuel is converted into glass through a process, called vitrification. The vitrified waste is stored for an interim period in a Solid Storage Surveillance Facility prior to its eventual disposal in geological disposal facility. This policy is at par with international practices following the guidelines of International Atomic Energy Agency (IAEA).
 5. The treated liquids and gases are diluted and discharged under monitoring, ensuring that the discharges are well within the limits set by Atomic Energy Regulatory Board (AERB). The discharges are also monitored by the AERB and their details are published in the Annual Report of AERB which are in the public domain.
- (c) Not applicable in view of (b) above.
- (d) With the advent of new technologies based on partitioning of waste, where long-lived radioactive waste constituents are separated prior to immobilizing them in the glass matrices, the need of deep underground geological disposal facility will reduce to a great extent in near future. The long lived radio isotopes are planned to be burnt in fast reactors or Accelerator Driven Sub Critical systems to get it converted into short-lived species. Main fission products like Cs-137 & Sr-90 present in the waste are recovered using in house developed technologies and deployed for societal applications covering medical applications and external irradiators. This is accomplished first time in the world by India, where radioactive waste is regarded as a useful by-product.
