

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UNSTARRED QUESTION NO. 371
TO BE ANSWERED ON 06.02.2025

Risks associated with the release of radioactive wastewater

371. SHRI BABUBHAI JESANGBHAI DESAI:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) the manner in which Government is addressing concerns and engaging with neighbouring communities and countries that may be affected by the release of radioactive wastewater;
- (b) the details on the long-term environmental and health monitoring programmes in place to assess the impact of released radioactive wastewater;
- (c) whether Government is planning for improvement of wastewater treatment technologies to further reduce the levels of radioactive contaminants;
- (d) the details of international guidelines or agreements Government is adhering to in managing and releasing radioactive wastewater; and
- (e) the update on Government's efforts to explore alternative disposal methods for radioactive wastewater, such as storage or deep geological repositories?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI KIRTI VARDHAN SINGH)

(a) to (e)

The Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India under Schedule-VI of the Environment Protection Rules, 1986, has notified general effluent standards for radioactive materials. The details of the same are as follows:

S. No.	Parameter	Standards			
		Inland Surface Water	Public Sewers	Land for Irrigation	Marine Coastal Areas
34.	Radioactive materials:				

	(a) Alpha emitter micro curie/ml	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml	10^{-6}	10^{-6}	10^{-7}	10^{-6}

Overall safety aspects related with radioactivity from nuclear power plants is regulated by Atomic Energy Regulatory Board.

The radioactive solid, liquid and gaseous wastes are classified into various categories as indicated by the safety guidelines issued by Atomic Energy Regulatory Board (AERB) and BARC Safety Council (BSC). The wastes generated at the nuclear power stations during their operation are of low and intermediate radioactivity level. The radioactive solid, liquid and gaseous wastes are presently classified into various categories based on the surface radiation dose rates for solid waste and radioactivity concentration for liquid and gaseous waste streams. These wastes are appropriately treated, concentrated and subjected to volume reduction. The concentrates are immobilized in inert materials like cement, bitumen, polymers etc. and stored in specially constructed structures (near surface disposal facilities) located at the site under monitoring. The treated liquids and gases are diluted and discharged under continuous monitoring, ensuring that the discharges are well within the limits set by Atomic Energy Regulatory Board (AERB). The radioactivity level of the stored wastes reduces with time and by the end of the plant life, falls to very low levels.

The Government is trying to recover the useful radioactive elements from radioactive waste. High level radioactive waste contains many useful isotopes like Caesium- 137, Stronium-90, Ruthenium-106 etc., which have many industrial as well as medical applications. More than 90% of radioactivity in high level radioactive waste is mainly due to Caesium-137, Stronium-90, Ruthenium-106, out of which, Caesium-137 is recovered and used for blood irradiators in non-dispersive sealed source form. Sr-90 is also recovered for milking of Yttrium Y-90 for medical applications. Ruthenium-106 is recovered and converted into Ru-plaque for treatment of eye-cancer. Recovery of all the above three radio-isotopes from nuclear waste has been demonstrated from high level radioactive waste for their societal applications.
