

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARRED QUESTION NO.24
TO BE ANSWERED ON 03.02.2025

Nano Bubble Technology

24. SHRI RAJESH VERMA:
SMT. SHAMBHAVI:
DR. SHRIKANT EKNATH SHINDE:
SHRI NARESH GANPAT MHASKE:
DR. D. PURANDESWARI:
SHRI RAVINDRA DATTARAM WAIKAR:

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

- (a) the details of the expected environmental and ecological benefits of implementing Nano Bubble Technology for algae removal and water purification;
- (b) the details of difference between the Nano Bubble Technology and the conventional methods of water purification and the manner in which it aligns with the goals for sustainable water management of the country;
- (c) the steps taken by the Government to ensure the proper hygiene and the health of the aquatic animals in the different wildlife conservation sites since 2019;
- (d) whether there are mechanisms in place to monitor the long-term impact of this technology on water quality and animal health if implemented widely, if so, the details thereof; and
- (e) whether the Government is considering to install the aforementioned technology in wildlife conservation sites of different States, especially in Maharashtra and Bihar?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

(SHRI KIRTI VARDHAN SINGH)

(a) & (b)

Nano bubble technology is a method of water treatment that uses tiny bubbles to improve water quality. The important ecological benefits are to remove contaminants, increase dissolved oxygen content, help in the removal of phytoplankton (algae), reduce biofilm, and ultimately improve the properties of water suitable for aquatic animals. The nano bubble technology can lead to a more homogeneous distribution due to the minuscule size and persistence of the

bubbles in the water bodies. On the other hand, traditional systems may exhibit less uniformity in distribution, which can result in variable oxidation and disinfection performance across the water volume. One machine using the Nano Bubble technology has been put on a trial basis in National Zoological Park, Delhi, recently on 3.12.2024. It is under trial.

(c)

The Management of National Parks and Sanctuaries, including those Protected Areas having aquatic animals, is done as per the Management Plan prepared under the provisions of the Wild Life (Protection) Act, 1972. These include maintaining water level, water circulation and dilution, silt removal, aeration, establishing STP along the water bodies and aquatic weed removal through mechanical and manual methods. The Central Zoo Authority, in fulfilment of the functions assigned, implemented the standard and norms, inclusive of proper hygiene and health of all captive animals in zoos including aquatic animals, as prescribed in the Recognition of Zoo Rules, 2009 notified by the Central Government under section 63 of the Wild Life (Protection) Act, 1972. Further, the Central Zoo Authority has issued guidelines to zoos time to time for proper hygiene and health of all captive animals in zoos.

(d) & (e)

As nano bubble technology has been used in India for water treatment recently only on a pilot basis, the long-term impact of this technology on water quality and animal health can be known in due course of time.
