

**GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA**

UNSTARRED QUESTION NO:2917

ANSWERED ON:10.12.2014

ATOMIC ENERGY FOR POTABLE WATER

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Will the Minister of ATOMIC ENERGY be pleased to state:

- (a) whether sea water can be converted into potable water by using atomic energy;
- (b) if so, the details thereof including the projects set up for this purpose along with the quantity of the potable water produced by them;
- (c) the cost of conversion of sea water into potable water by using atomic energy;
- (d) whether the Government proposes to set up more such projects in the country during the current financial year, and if so, the details thereof along with the funds allocated for such projects; and
- (e) the steps taken by the Government to reduce the conversion cost of sea water into potable water in the country?

Answer

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

(a) & (b) Yes, Sir. Desalination of seawater is possible by either Reverse Osmosis (RO) or Thermal processes. Electrical and/ or thermal energy from atomic power station or nuclear research reactor can be used for this purpose.

An eighteen lakh (18 lakh) litres per day capacity sea water desalination plant operating on the Reverse Osmosis (RO) process has been setup, as part of Nuclear Desalination Demonstration Project (NDDP) at Kalpakkam, Tamil Nadu. Another plant, a Multi-Stage Flash (MSF) Sea Water Desalination Plant with a capacity of forty five lakh (45 lakh) litres per day has also been setup at Kalpakkam as a part of NDDP. It is located adjacent to Madras Atomic Power Station (MAPS) and uses low pressure steam as energy input for MSF desalination plant. The hybrid MSF-RO plant is operated to produce distilled water for high end industrial applications and potable water for drinking and other applications.

(c) The cost of conversion of sea water into potable water by using atomic energy ranges from 5-10 paise for a litre depending on local conditions, quality of end product and technology in use. It also depends on sea water quality, local infrastructure and logistics.

(d) A project to set up a seawater desalination plant of fifty lakh (50 lakh) litres per day capacity using conventional energy at Orissa Sand Complex (OSCOM), Indian Rare Earths Limited (IREL), Chatrapur, Ganjam District, Odisha at an estimated cost of `112.90 crore (Rupees one hundred twelve crore and ninety lakh only) has been sanctioned under XII Plan (Industries Sector). The desalination plant is intended primarily for meeting the industrial and potable drinking water requirements of DAE unit.

(e) When large scale plants are built, the economy in scale will provide further reduction in the conversion cost of sea water into desalinated water. Bhabha Atomic Research Centre (BARC), a constituent unit of Department of Atomic Energy (DAE) has also taken up research & development (R&D) projects on desalination and water purification technologies as well as development and application of membrane technology aiming at cost reduction strategies through technological innovations. Some of these projects are:

- i) Development of membrane for RO process
- ii) Advanced desalination technology studies
- iii) Solar energy driven desalination systems
- iv) Experimental studies for recovery of valuables from brine