

of this initiative, the Government has established a National Centre for Research in Glaciology at Dehradun to institutionalize glaciology research in India, and is endeavoring to strengthen the observational and monitoring networks as well as, network the knowledge institutions and strengthen their research capacity for co-ordinated research.

Thin Film Composite

3587. SHRIMATI JAYA BACHCHAN : Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is a fact that a CSIR laboratoy has developed a Thin Film Composite (TFC) reverse osmosis (RO) high flux memorandum for recovering process water for industrial use from domestic sewage through tertiary treatment;

(b) whether the technique has been used on a mass scale for treatment of water;

(c) if so, the details thereof; and

(d) if not, the reasons therefor?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI PRITHVIRAJ CHAVAN) : (a) Yes, Sir. Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar, Gujarat, (a constituent lab. of CSIR) has developed and scaled up Thin Film Composite (TFC) Reverse Osmosis (RO) membrane technology. The technology is used primarily for drinking water application through desalination of brackish and seawater.

(b) Yes, Sir. Ten technique has been used on a mass scale for treatment of water.

(c) A list of various water treatment units that have been set up by CSMCRI is provided in the enclosed Statement (*See below*). Since 2000, CSMCRI has installed 53 RO desalination plants of various capacities which also includes. 1 plant in Kenya and 6 plants in Afghanistan. It has also designed and developed 2 mobile RO units which have been used to provide relief in natural Calamity affected areas.

(d) Does not arise.

Statement

List of RO desalination plants installed by CSMCRI since 2000

Sl. No.	Location of Plant	State	Capacity LPH*	Year of installation	App. Feed water salinity (ppm)**
1	2	3	4	5	6
1.	Mocha	Gujarat	1500	2000	8,000
2.	Kisari	Rajasthan	2000	2002	5,000
3.	Barmer Airforce station	Rajasthan	1500	2003	3,000

1	2	3	4	5	6
4.	Nelamadur, Ramanathapuram, Dist	Tamil Nadu	300	2004	Seawater
5.	Ervadi, Ramanathapuram, Dist.	Tamil Nadu	900	2004	8,000
6.	Akkarapattai, Nagapattinam Dist.	Tamil Nadu	2000	2005	6,005
7.	Hasnabad	West Bengal	700	2005	3200
8.	Jaisalmer	Rajasthan	700	2005	3000
9.	Nagaur	Rajasthan	2400	2005	7000
10.	Barmer	Rajasthan	2500	2005	3,000
11.	Andaman and Nicobar Island	Union Territory	1000	2005	3,500
12.	Campbel Bay Island	-do-	1000	2005	12,000
13.	Nelamadur, Ramanathapuram, Dist.	Tamil nadu	1000	2005	Sea water
14.	Mullimunai, Ramanathapuram Dist.	Tamil Nadu	1000	2006	Sea water
15.	Thirupalikudi Ramanathapuram, Dist.	Tamil Nadu	1000	2006	Sea water
16.	Karankudu Ramanathapuram, Dist.	Tamil Nadu	1000	2006	Seawater
17.	Tilonia	Rajasthan	700	2006	2500
18.	Dwarka	New Delhi	2500	2006	2500
19.	Surat	Gujarat	2500	2006	4500
20.	Abadkulyadanga	West Bengal	2500	2006	15000
21.	Barge Mounted	West Bengal	150	2006	15000

1	2	3	4	5	6
22.	Barmer	Rajasthan	2500	2006	3000
23.	CSIR, Maharani Bagh	New Delhi	5000	2006	2800
24.	Bhavnagar	Gujarat	2000	2006	2600
25.	Bhuj Airforce station	Gujarat	2000	2007	2500
26.	Bhuj Airforce station	Gujarat	600	2007	2000
27.-28	CMFRI, Mandapam	Tamil Nadu	2000	2007	7000
29.	Kensalt	Kenya	2000	2007	Sea water
30.	MARS, Mandapam	Tamil Nadu	500	7000	
31.-36	Six Villages	Afghanistan	600-1000	2008	2000-3000
37.	CGCRI, Kolkata	West Bengal	500	2008	2000
38.	Mahua	Gujarat	600	2008	2200
39.	Vadodara	Gujarat	500	2008	2800
40.	Kosuru	AP	4000	2008	2000
41.	Air-Force, Naliya	Gujarat	2000	2008	2000
42.	Air-Force, Naliya	Gujarat	500	2008	2000
43.	Air-Force, Samana	Gujarat	500	2008	2000
44.	Air-Force, Samana	Gujarat	500	2008	2000
45.	Nagaur Dist.	Rajasthan	2000	2008	5000
46.	Churu Dist.	Rajasthan	2000	2008	5000
47-51.	Five Villages	Afghanistan	600-1000	2009	2000-3000
52.	Chachiyawas	Rajasthan	1000	2009	2900
53.	Siripuram	AP	4000	2009	2000

*Litres per hour

**Parts per million