

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 134/2015  
(M.A. Nos. 757/2015 & 477/2016)

Friends through its General Secretary Applicant(s)

Versus

Ministry of Water Resources Respondent(s)

Date of hearing: 20.12.2018

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

For Applicant(s): Mr. Rahul Choudhary, Advocate

For Respondent(s): Mr. Amritesh Raj and Mr. Piyush Singh,  
Advocates  
Dr. Abhishek Atrey, Advocate for MoEF  
Mr. Sangram Patnaik, Ms. Swayam Singh  
Patnaik and Mr. Mukesh Kr. Mishra for  
DDCA  
Mr. Divya Prakash Pande, Advocate for DJB  
for Ms. Sakshi Popli, Advocate  
Mr. Anuj Sarma, Advocate  
Mr. Rajkumar, Advocate for CPCB

**ORDER**

1. The issue in this application relates to utilization of waste water generated during Reverse Osmosis (RO) process. According to the applicant only 20% of the water fed to RO system is purified and 80% is left unpurified and is wasted. Water being a scarce commodity, such huge wastage is not affordable and has the adverse impact on the ecology. More and more RO systems are being used for the domestic purposes, offices, canteens, hotels, industrial units etc. on account of awareness for consumption of purified water.
2. The application is mainly based on newspaper articles dated 15.11.2013 and 14.07.2013 in The Hindu. Article dated

15.11.2013 is to the effect that in a water scarce area, wastage of water in the RO process may need to be regulated. It is suggested that options of manual or mechanical filter are the better options to the RO system. Manual system can use 'Silver Nano' technology and 'Chlorine'. Article dated 14.07.2013 suggests that RO purifiers are basically designed for treating brackish water. It is not the right technology for the domestic purification.

3. Application was filed on 24.04.2015. The Tribunal issued notice on 29.04.2015 to the Ministry of Water Resources, Central Pollution Control Board (CPCB), Ministry of Environment and Forest & Climate Change (MoEF&CC) and Association of RO Manufacturers.

4. Ministry of Water Resources has stated that manufacturers of RO systems will be in a better position to assist the Tribunal. The Water Quality India Association (WQIA), representing water treatment industries, has stated that RO system ensures availability of pure water. The membrane separates two solutions containing different amounts of dissolved chemicals. The membrane allows some compounds in the water to pass through it, but does not allow larger compounds to do so i.e. a semipermeable membrane. Pressure difference causes pure water to pass through the membrane from the dilute to the more concentrated solution. The pressure is called osmotic pressure and this process is osmosis. The natural tendency for water is to move through the membrane from the dilute to the concentrated solution until chemicals reach equal concentrations on both sides of the membrane. This means that a system with 100 gallons/day of untreated

water fed to it with a 20% recovery rate would yield 20 gallons/day of treated water and dispose of 80 gallons/day in the waste stream.

5. It is further stated that 98 Districts in 13 States in India are affected by high Arsenic contamination in groundwater. High Total Dissolved Solids (TDS) are common which can adversely affect the health. Thus, RO system is helpful in the situation. The residue of purified water is not water wasted but water consumed in the same way as the water is leftover after washing clothes or after bathing.

6. In its rejoinder, the applicant has referred to a statement of Mr. B. Sengupta, former Member Secretary, CPCB as follows:

*“RO technology removes the total dissolved solids in the water. All these pollutants are absent in the water when it’s ready for drinking. But the problem is that the waste water, which is laden with the same pollutants, is then thrown away. The same pollutants mix with ground water and re-enter our system.”*

7. It is thus submitted that polluted water rejected by the RO system mixes with the ground water and creates further complexity. Ultimately, RO system instead of helping to the ecology, causes further damage.

8. In further affidavit filed by WQIA, it is stated that the Indian Standard (IS 10500:2012-Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Drinking Water Sectional Committee had been approved by the Food and Agriculture Division Council. Best available technology to purify drinking water to achieve the said standard is the RO system. Other methods for disinfection are Chlorine (gas), Sodium hypochlorite, Calcium hypochlorite, Chloramines, Ozonation, Ultraviolet Light and Chlorine



Dioxide. Methods for filtration are Slow Sand Filtration, Diatomaceous Earth Filtration, Direct Filtration. Process of membrane filtration are Nano filtration, Ultra filtration, Micro filtration, Bag filtration and Cartridge filtration. ION Exchange and Demineralization involve ION Exchange, Reverse Osmosis and Activated Alumina. Technology suitable for organic removal are Granular Activated Carbon and Aeration.

9. WQIA has further stated that Ministry of Railways, Work Directorate, Research Design and Standards Organisation, Lucknow vide report no. RDSO/WKS/2015/2, in January, 2015, issued guidelines on water purification by RO.
10. We have heard the learned counsel for the parties.
11. Learned counsel for the applicant submitted that there is need for appropriate guideline/regulation so that 80% of the available water is not wasted in the RO process. WQAI on the other hand states that there is no wastage as purification process is necessary for public health.
12. There is no denying the fact that while purification may help public health by avoiding adverse effect of heavy metals or other contaminants, the fact remains that the rejected water remaining major part which goes to the ground water and again contaminates even the pure ground water.
13. There is undoubtedly scarcity of drinking water. While purity of drinking water is a priority, the process of purification should not result in contamination of the remaining available water.

14. The answer may have to be provided by use of appropriate technology making re-filtration or secondary use of the water rejected by the RO system viable. It may also have to be explored whether deficiencies in the filtered treated water can be made up and whether the purified water needs to be re-mineralized so as to compensate for the minerals lost during the process and also how the re-filtered water can be utilized. Further question is whether different approach is required in different parts of the country which has specific problems of contamination and needs customized solutions. These questions need to be gone into by an Expert Committee.

15. Accordingly, we direct constitution of an Expert Committee as follows:-

- (i) Representative of MoEF&CC
- (ii) Representative of CPCB
- (iii) Representative of Bureau of Indian Standard
- (iv) Representative of IIT, Delhi
- (v) Representative of NEERI, Delhi

The nodal agency will be the CPCB.

16. The Expert Committee may go into the above questions and furnish a report preferably within four months. The Expert Committee may also review the prescription of standards for drinking water. The Expert Committee may call for suggestions and opinion of all concerned, including Manufactures of water purifiers by an appropriate mechanism. The upgradation of available technology, having regard to the modern advancements, may also be explored by the Expert Committee so that Manufacturers can be appropriately advised.

17. A report may also be given about the best possible secondary use of the rejected water by the commercial and individual users employing the RO technology. The Committee may hold its first meeting within two weeks.
18. Let the report of the Expert Committee be furnished to this Tribunal on or before 30.04.2019 by e-mail at [ngt.filing@gmail.com](mailto:ngt.filing@gmail.com).
19. Copy of this order be sent to CPCB for compliance by e-mail.

The application is disposed of.

Put up for consideration of the report on 14.05.2019

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

December 20, 2018  
Original Application No. 134/2015  
(M.A. Nos. 757/2015 & 477/2016)  
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