Water Quality Report - Draft notification on RO systems

Part of: GS-III- Environment-Pollution (PT-MAINS-PERSONALITY TEST)

Recently, Ministry of Consumer Affairs, Food & Public Distribution has released Water Quality Report for State capitals & Delhi as analysed by the Bureau of India Standards (BIS).

The study focused on the quality of piped drinking water and also ranked the States, smart cities and districts accordingly. This study was in line with Jal Jeevan Mission which aims to provide tap water to all households by 2024.

Parameters

- Tests were conducted on various parameters:
  - Organoleptic and Physical Tests
  - Chemical test
  - Toxic substances
  - Bacteriological tests
  - Total Dissolve Solids (TDS)
  - Turbidity
  - Total hardness
  - Total alkalinity
  - Minerals and metals
  - Presence of Coliform and E Coli
- A vast majority of the samples have failed to comply with the requirements in one or more parameters.
- Tap water in Mumbai is the safest for drinking while Delhi’s water is one of the worst.

Challenges

- Lack of initiatives in tap water systems due to the expanding packaged drinking water.
- High dependence on groundwater in fast-growing urban clusters where piped water systems do not exist.
- Lack of accountability of the official agencies.
- Absence of robust data in the public domain on quality testing.

Conclusion

It should be legally binding on agencies to achieve standards and empowering consumers. State governments should take an integrated view of housing, water supply, sanitation and waste management.

A scientific approach for water management should be adopted. A separate agency in each state should be entrusted for regular testing rather than relying on the same agency.

Data on water should be made public on the same lines as air quality which would put pressure on governments to act.

Jal Jeevan Mission
Recently, Union Ministry for Jal Shakti, conducted a conference of State Ministers on Jal Jeevan Mission in New Delhi.

- Indian Prime Minister on independence day announced that the government will launch a Jal Jeevan Mission to bring piped water to households and resolved to spend more than ₹3.5 lakh crore in the coming years.
- India has 16% of the world population, but only 4% of freshwater resources.
  - Depleting groundwater level, overexploitation and deteriorating water quality, climate change, etc. are major challenges to provide potable drinking water.
- Therefore, ensuring India’s water security and providing access to safe and adequate drinking water to all Indians is a priority of the Government.
- Under Jal Jeevan Mission, the government envisages renewed efforts to provide water supply to every household by 2024.
- The Jal Jeevan Mission is set to be based on various water conservation efforts like point recharge, desilting of minor irrigation tanks, use of greywater for agriculture and source sustainability.
- The Jal Jeevan Mission will converge with other Central and State Government Schemes to achieve its objectives of sustainable water supply management across the country.
- The Prime Minister appealed to all states to generate maximum community participation in the form of ‘Jan Andolan’ to achieve the target of functional household tap connection by 2024.

Purifying water: On draft notification on RO systems

The Environment Ministry’s draft notification to regulate the use of membrane-based water purification systems primarily concerns the manufacturers of reverse osmosis (RO) water filters but effectively bars domestic users from installing RO systems.

The Central government has drawn up plans to ban the use of membrane-based water purification systems (MWPS) – primarily reverse osmosis (RO) systems – in areas where the source of water meets the Bureau of Indian Standards’ drinking water norms.

Draft notification that effectively prohibits home users to install MPWS:

The notification is the culmination of a legal dispute before the National Green Tribunal, which had banned RO water filter use in Delhi as the purification process wastes water.

The notification mainly deals with rules for commercial suppliers and for integration of systems that inform consumers about TDS levels, a major determinant of water quality.

This is envisaged both before water enters filtration systems and after it has been filtered.

The association of water filter manufacturers challenged this order and the litigation led to this pan-India notification, where the intent is to conserve water and cut waste.

What is Reverse Osmosis?

Reverse Osmosis is a technology that is used to remove a large majority of
contaminants from water by pushing the water under pressure through a semi-permeable membrane.

Reverse Osmosis works by using a high-pressure pump to increase the pressure on the salt side of the RO and force the water across the semi-permeable RO membrane, leaving almost all (around 95% to 99%) of dissolved salts behind in the reject stream.

The amount of pressure required depends on the salt concentration of the feed water. The more concentrated the feed water, the more pressure is required to overcome the osmotic pressure.

The desalinated water that is demineralized or deionized, is called permeate (or product) water. The water stream that carries the concentrated contaminants that did not pass through the RO membrane is called the reject (or concentrate) stream.

Problem with Reverse Osmosis (RO) systems:

In RO, the total dissolved solids (TDS) in water, which covers trace chemicals, certain viruses, bacteria and salts can be reduced, to meet potable water standards. Home filters waste nearly 80% of the water during treatment.

Second, some research has shown that the process can cut the levels of calcium and magnesium, which are vital nutrients.

The resort to prohibition (to restrict home filters) may cause consumer apprehension but it is unlikely that they will be taken to task for using such water filters.

For one, the notification implies, these filters are only prohibited if the home gets water supply that conforms to Bureau of Indian Standards (BIS) for Drinking Water.

Although several State and city water boards claim BIS standards, the water at homes falls short of the test parameters.

World Health Organization issues reverse osmosis water warning:

Just about everyone knows that Reverse Osmosis (RO) systems excel at removing water impurities, but few are aware that they also remove the beneficial minerals.

In fact, the reverse osmosis process removes 92-99% of beneficial calcium and magnesium.

After analysing hundreds of scientific studies concerning demineralized or reverse osmosis water, the World Health Organization released a report stating that such water “has a definite adverse influence on the animal and human organism.”

Consumers have been so concerned with removing as many things from water as possible that they have forgotten to ask if the resulting water actually improves health or causes health problems.

It’s assumed that no toxins equal better health, but there is simply more to healthful water than a lack of toxins, as the World Health Organization clearly points out.

Official water supply quality by BIS:
The BIS, last year, ranked several cities on official water supply quality. Delhi was last and only Mumbai met all the standards.

In the **28 test parameters**, Delhi failed 19, Chennai 9, and Kolkata 10. The BIS norms are **voluntary for public agencies** which supply piped water but are **mandatory for bottled water producers**.

Moreover, most of the country does not have the luxury of piped water. The **Composite Water Management Index (CWMI)** of NITI Aayog says that 70% of water supply is contaminated.

**India is ranked 120th among 122 countries** in an NGO, WaterAid’s **quality index**. The case for restricting people’s choices on the means they employ to ensure potable water is thus weak.

**Conclusion:**

The aim is also to ensure that **after 2022, no more than 25% of water being treated is wasted**, and for residential complexes to reuse the residual waste water for other activities, including gardening.

When implemented, the notification’s primary aim should be to persuade authorities to **upgrade and supply BIS-standard water at the consumer’s end**.

This should be done without additional costs, particularly on millions who now lack access to protected supply.