



IPA DEBATE CLUB QUESTION 10



R.O. (Reverse Osmosis) type of water purifier are frequently used in residences as 'Point of Use' units mostly in the kitchen.

Is it recommended to use such type of purifiers and if not why?

RESPONSES

RESPONSE 1

RO type of purifier should not be used because its rejected water is highly contaminated. Due to negligence, if such water is unknowingly consumed by any living being, then it can prove to be lethal.

Sahil Shah

Partner, Patil Shah Housing

IPA Membership Number: L-4414

RESPONSE 2

Reverse osmosis removes almost all the dissolved solids from the input water. If some amount of blending is not done then the remaining dissolved solids can render the water slightly corrosive. This again depends on the input dissolved solids. If input TDS is 1000 mg/L then the output dissolved solids may be around 50 mg/L. This water will be lower in pH value & will prove to be corrosive. If the input TDS is about 1800 mg/L then the output may be around 100 mg/L. This amount may be a little safer.

In all the RO units being sold how can the equipment cater to the variation in input TDS in the various cities all over the country.

The most important point is that once you are habituated to RO water your physical immunity decreases. In such a case any other clean water does not suit the body. Bone structure becomes weaker.

It is impractical to drink bottled mineral water always.

Therefore, in my opinion, RO water should be avoided as far as practicable.

Pradeep Kumar Chakravarti

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RESPONSE 3

RO systems for households are a big no no owing to a few facts as follows:-

- 1) Excessive wastage of water in RO system.
- 2) Creation of dead water- depletion of essential salts and minerals from the drinking water which are required by the humans for wellbeing and metabolism. Lack of minerals in water forces the body to use its own secreted essential minerals and results in bad health.
- 3) Decreasing level of human immunity and development of fragile digestive system over a period of time.
- 4) Acidic level of water increases through drinking RO water whereas human body requires balanced alkaline water for wellbeing.
- 5) Expensive installation and recurring maintenance costs.

Anupam Khanna
Valco International
Jalandhar

RESPONSE 4

“Reverse Osmosis unit has semi permeable membrane which separates dissolved solids at pressure applied higher than osmotic pressure. Removal of dissolved solids will yield water which is de – mineralized.

For drinking purpose water needs to have sufficient minerals so that digestive system works efficiently. However, high amount of dissolved solids in drinking water also leads to medical issues hence removal seems to be essential.

Hence most importance aspect before proceeding on installation of R. O. Water purifier is to get drinking water quality tested. Based on analysis report vis – a – vis recommended quality as per IS 10500: 2012, one needs to decide which Water Purifier is essential. Sometimes, simple Ultra Filtration unit will be sufficient to yield best quality with no microbial / viral content (As good as “Jain Water”) hence no chemicals required for disinfection.

However, if R. O. unit is essential then ensure that reject water is properly managed instead of wasting it. Also ensure that sufficient amount of minerals are added in product water so that we remain adaptive to some level of dissolved solids in water.”

Mr. Sanjay Sharad Javanjal
Hon. Secretary (IPA – Pune Chapter), Director – Deccan Environmental Consultants Pvt. Ltd.
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RESPONSE 5

RO type of water purifiers are not recommended for consumption. Even in few months, it can create serious side effects.

RO systems to purify water are extensively used in most of the kitchens. Along with removal of water impurities, as primary function of RO water purifier, it also removes around 95% of beneficial calcium & magnesium. This will have a definite adverse effect on the human organs.

RO water which doesn't contain enough minerals, when consumed, leaches minerals from the body. This means that the minerals being consumed in food & vitamins are being urinated away. Less minerals consumed plus more minerals being excreted causes serious side effects and big health problems.

Sandeep Kadiyal
Project Manager - Site Design Co-ordination



RESPONSE 6

No need to use such types of purifiers instead of RO purifiers, we can store rainwater in a separate tank and we can use it for drinking and cooking. Example for 4 members family 6000 L tank is enough for drinking and cooking. From the rainwater sump we can fix a small booster to the kitchen and we can add UV filters and directly use it.

Anandhakumar.G
Sana Ventures

RESPONSE 7

Domestic RO systems have reject of more than 60 percent which goes to the drain from the sink and there is a huge wastage of scarce water resources. Also, all the essential minerals and salts get removed which is required by the human being.

Most the Indian kitchens have supply of potable water whose source is the municipal water. The TDS is normally within 100 and water is not hard with hardness within 150.

To conserve water we should go with Ultrafiltration and UV dosing to kill the bacteria and viruses. Additionally, activated carbon filter can be also added for taste correction. These filters are readily available and cost much less than RO systems and are totally made in India.

Now BARC has developed NANO filtration technology for RO systems where the water reject has come done by half and it retains the essential minerals also.

Comparison chart for filtration level

- 1 UF is 0.01 microns.
2. Nano filtration is 0.001 microns
3. Normal RO membrane filtration is 0.0001 microns.

Satish Iyengar
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RESPONSE 8

Generally small RO water purifiers will be installed in the kitchen as it's a point of use location.

Near the sink area, it is recommended to use it like that only. Drain line connected to floor trap and RO water used for cooking and drinking.

PK. Murugesan
PKM consultants



RESPONSE 9

It is not recommended to use point of use (Domestic) R O units in Kitchen due to the reject water being higher than 60-70% and recovery is only 30% to 40%(Maximum). The reject water goes to drain and inturn reach UGD network or STP. Instead it is better to check the input water quality to the dwelling unit/apartment/housing complex and go for centralised water treatment plant based on quality parameters. Incase if the TDS is higher than 500ppm, centralised RO plant which can bring the treated water quality under 500 ppm (200 ppm for drinking and around 400ppm for domestic use) is recommended. The reject water can be blended with STP treated water incase of group housing/apartment complex and use the blended water for landscape irrigation. The recovery in centralised RO plant can go upto 60-70% depending on the Membranes used.

This would not only save wastage of fresh water but also preserve required minerals for human consumption. It is recommended to use only point of use disinfectant (preferably UV based) system for extra precaution incase of any bacterial contamination that might occur in pipeline/storage tanks after centralised RO treatment.

Prasanna Venkatesh G

Executive Vice President - Sobha Ltd.

Life Member 221.

RESPONSE 10

Reverse osmosis (RO) water purifiers are effective at removing dissolved impurities, heavy metals, and other contaminants from drinking water. However, using an RO water purifier at home may not always be necessary, and in some cases, it may even be detrimental.

RO water purifiers remove essential minerals, such as calcium and magnesium, along with the contaminants. This can lead to an imbalance of minerals in the body, potentially causing health issues. Additionally, the RO process wastes a significant amount of water, which is a precious resource.

Therefore, it is important to carefully consider the quality of the local water supply before investing in an RO water purifier. In areas where the water is highly contaminated or has a high TDS (Total Dissolved Solids) level, using an RO water purifier may be necessary. However, in areas where the water quality is relatively good, it may be better to opt for a simpler water filtration system that does not remove essential minerals from the water. Ultimately, the decision to use an RO water purifier should be based on individual circumstances and water quality.

Dr. Syed Moazzam Ali

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CONCLUSION



Sharat V. Rao
Convener, Debate Club

R.O purifier is recommended to be used only when the feed water is high in Total Dissolved Solids (TDS). It is advisable to keep the TDS level of water to less than 500 mg/l.

In R.O purifiers the reject water rate is quite high around 65 to 75% which means wastage of water. This reject water contains salts and contaminants and is corrosive.

R.O purifier removes all the TDS present in water. This leads to depletion of all the essential salts and minerals which in turn can affect your health.

In case it is deemed that R.O purifier is required then it is recommended to adopt some amount of blending such that the output water has around 100 mg/l of TDS.

Note: Editorial Board appreciates the wonderful response of IPA members in answering this Debate Club Q and making the Debate Club as a interesting feature. We will send gifts to each of the respondents for their contribution.