IPA DEBATE CLUB QUESTION 5 (IPADCQ - 5)

Compiled by: BSA Narayan, Convener, IPA Technical Committee

QUESTION: What kind of water purification is preferred for domestic usage, considering the myth among the people that R.O. purifiers should be banned, since it removes the essential minerals like, Calcium, Magnesium, Manganese and Potassium and wastes a lot of water

BACKGROUND: Water is conserved everywhere, and we cannot waste the water specially during treatment. At the same time, the quality of supplied / available water for domestic usage is unknown and there is no idea of the source of water. People tend to set up point of use water purification system, without checking the inlet parameters of the water. It is very important to check the inlet water parameters, before using water purification system for domestic usage.

RESPONSES

RESPONSES 1

Kindly note that water quality being supplied by municipal corporation is already treated and that if one uses UV based or Ultra Filtration Membrane based water purifier it would ensure essential minerals are not being removed from potable water at the same time water is free from harmful bacteria.

However, in areas outside city limits where municipal water is not being supplied and people depend on ground water supplied through tube well which is not treated and more importantly it is very saline. In this case one can use an RO based water purifier with a mineral adjustor which again ensures product water retains desired level of minerals in water.

Nikhil Pandya
Head - Business Development Aqua Engineers
Membership no. L – 4030

RESPONSES 2

There are four steps to conclude the type of domestic water purifiers;

(1) Identify the requirement, (2) What kind of purification do you need, (3) Location of installation, (4) Use of Certified purification system

(1) **Identify the requirement -** Before you choose a purification system, you need to know what's in your water and what particles/pollutants you need to get rid of from your source of water. Send the one or two samples for your source of water for testing to an accredited laboratory to test water for physical-chemical and bacteriological examination as per drinking water specification code IS:10500. The laboratory will give the report comparing test values with acceptable, rejectable remarks with comparison with the above code.

(2 **What kind of purification do you need -** Based on the quality of water in your tap, figure out what type of filter you need. Activated carbon filters are the most common types of filter. They can remove heavy metals like copper, mercury and lead, parasites, chlorine and pesticides. You can find activated carbon in pour-through water filtration pitchers and many under sink filtration systems. Carbon filters trap contaminants in the pores of the positively charged, highly absorbent filter. Some chemicals & TDS in the water can be removed only by reverse osmosis (RO) purifiers. RO purifiers through reverse the natural flow of water, passing it through a semi-permeable membrane. It is one of the most effective purifiers. It is very much advised to read the test report carefully before ordering for any particular purification system. It would be sheer waste of water and energy to use RO purifier for all kinds of water without testing. Generally, water supplied by municipal authorities, may many time only requires check on turbidity and disinfection, which would be removed from Activated Filters followed with or without online UV treatment.

(3) **Location of your filter -** You can choose either a whole-house filter, which will filter the water before it enters your home or a point-of-use filter, which will filter the water just before you use it. There are different kinds of filters depending on the type of installation such as table top, wall mounting and under the sink.

(4) **Use Certified purification system -** Always purchase a filter that's ISI/NSF certified. It means the filtration system has been tested to ensure it actually removes the contaminants it claims to remove. Don't purchase products that are not certified. Make sure you choose a reputed brand and certification of the product before purchase. You should have the filter installed by professionals only.

B O Prasanna Kumar
Chairman, IPA Bengaluru Chapter
Joint Managing Director, DesignTree Consultants, Bengaluru

RESPONSES 3

Instead of RO treatment plant, we can provide a filtration system with sand filter, carbon filter and UV for disinfection. Also, the softener to be provided if water quality is hard water.

Mahesh K Gosavi
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RESPONSES 4

As we know day by day technology is improving in water treatment. After RO there are so many technologies coming these days like Alkaline water, Kangen water etc.

But I suggest if TDS of Raw water is less than 300 PPM than only use simple water filter with UV system. It's good for drinking purpose.

If TDS is higher then we can use alkaline water purifiers. This technology comes with high recovery and with good mineral value.

Gaurav Sharma
Green Enviro Solutions - Chandigarh

Clarifications from Technical Committee (TC)

We have gone through the responses received from members. Basically everyone states that before we go in for the water purification system for domestic usage, the input water has to be tested as per standards and select the purification system.

We would like to state here that the Activated Carbon Filter will not be able to remove heavy metals, pesticides and micro plastic materials. If the test report identifies the above, we need to go for RO Treatment.

The specialists in the water treatment system are working out the need to redesign the RO water purification system when the Total Dissolved Solids (TDS) is below 500 ppm. They are also working out how to reduce the percentage of reject water while maintaining the efficiency in the performance of the system and affordability to the public.

The RO reject water and its wastage is also the national concern, the RO purifier manufacturers are developing systems with enhanced output ratio to reject water. They are also working on high efficiency with reduced energy consumption.

I.S. 10500 recommends 32 parameters on drinking water evaluation. Technically there are more parameters evolved in the new age technology on contaminants. Complete chemical analysis of water can provide correct information. Hence setting 500 ppm TDS is not the right methodology to install RO purifier. Even water at lower TDS may also contain many harmful contaminants which can cause adverse effects on health.

CONCLUSION

The myth that RO water is not good for health, is absolutely baseless. People often say that RO treatment will remove minerals from the drinking water. The Drinking Water contains only 2% to 10% of daily requirement of minerals like Calcium, Magnesium, Manganese and Potassium. Our food contributes to more than 90% of our daily requirement and hence the myth is not true.

The ground water usage is increasing and the water sometimes contains heavy metals like Arsenic, Fluoride, lead etc., Also there are other contaminants like micro plastic, pesticides, fertilizers and insecticides which are leeched into the soil there by infiltering into river water and ground water.

The contaminants mentioned above will have adverse and long term effect on health. RO purifiers are necessary for removal of such contaminants from the water which ensures good health for the society.

The set TDS level of 500 ppm is not the only parameter to go for RO plant. The TDS level does not provide enough information on contaminants of water.

The chemical analysis of water can only provide correct information on the quality of water. Hence setting of 500 ppm TDS is not the right threshold for installing a RO purifier. Water at lower TDS may also contain many harmful contaminants which could have adverse health effects while necessitating to provide the RO treatment.

There are discussions on pros and cons of drinking water devoid of minerals during the process of RO treatment, WHO recommends to go with remineralization to maintain the standards.

About Debate Club

Questions of importance to plumbing professionals would be published periodically in IPT, starting March 2019, with the view to get opinions/ clarifications.

IPA Debate Club was an established column earlier but was discontinued for some time.

Through the Debate Club, IPT wants to involve all for the benefit of the plumbing fraternity.

Answers, duly vetted by IPA Technical Committee would be published in IPT. The decision of the IPA TC would not be subject to any challenge or counter claim.

Name of the responding person, whose answer is close to the correct answer, would also be printed in IPT. The decision of the IPA TC would not be subject to any challenge or counter claim.

Convener, IPA Technical Committee