



**Comments on WaterSense® Draft Specification for
Point-of-Use Reverse Osmosis (RO) Systems**

February 9, 2023

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Commenter: Baruch Ziser
Affiliation: TipaTech
Comment Date: January 23, 2023

Email Text:

In order to produce binding standards for manufacturers of osmosis systems, the shortcomings of the filtration system must be analyzed and addressed and manufacturers must be forced to find solutions before a quality standard can be formulated.

It is clear to us all that public health must stand above anything else.

This is also true for both the standardization systems and the manufacturers.

Manufacturers must not be allowed to look for shortcuts and/or evade the development of high-quality solutions for public use, by relying on a high-quality and correct standardization system.

Here are the disadvantages of reverse osmosis systems that must be considered, as well as possible solutions.

[Taking the drain water out of the system](#)

The advantage of the "water drainage" pipe: there is a vast experience with this method with few failures, and it preserves the life of the membrane, so it is a cost-effective solution.

The disadvantage of the "drainage water" pipe: a huge waste of water; for the production of 1 liter of drinking water, 5 liters of water are poured into the sewer. The water emitted is wastewater and therefore does not meet the definition of a "green solution".¹⁾ Reverse Osmosis systems are connected to the sewer water pipe to remove the drainage water. During this removal, contaminating bacteria may enter directly into the membrane house, which may lead to serious diseases when drinking the water, and it doesn't matter how many barriers are put in the way.

Solutions:

A) Installing one or more devices that prevent backflow; the disadvantage is that bacteria from the sewage may still find a way to enter the membrane house

B) Moving the drain pipe to the garden to save precious water by irrigating the garden. This sounds like a good idea, but the bacteria may still develop in the chlorine-free water found in the drain pipe and return to the membrane.

C) Treatment of this water with the help of UV disinfection, which is considered cheap and convenient. It is clear to us that it is not possible to filter this water with mechanical filtration due to water pressure problems, and it would require an electric water pump,

which is very noisy, and the cost of replacing the filter is very high, especially if replacing the filter regularly.

Regarding the use of UV, it makes more sense but gives poor results, especially against bacteria of soil origin, such as *Pseudomonas*.

D) Water flow into a disinfected and sealed tank to prevent the passage of bacteria into the membrane sounds like a good solution, but it has two problems: firstly, it is costly and secondly, there is a problem of physical space for the water tank, especially in private homes.

The right solution: increasing the membrane's output capacity and thus eliminating the removal of the drain water outside the device. To be able to do this it is very important to lower the price of the production of the membranes so the consumer will be able to replace the product once a year.

The task is to reduce the cost of the membrane filter so that it pays to replace it annually. If the manufacturer's instructions require replacement once every two or three years, the size of the membrane can be reduced to a third of the length and/or to a third of the diameter, and thus it will pay to replace once a year.

Canceling the storage tank

The advantage of the storage tank: water is always available regardless of the water production capacity of the system.

Disadvantages of the storage tank: aftertaste of the rubber balloon that stores the water, growth of bacteria because the water is chlorine-free, malfunction of the air pressure in the tank prevents drinking water.

Advantages:

A) The size of the tank determines the amount of drinking water - increasing the tank size, or dividing the tank into several smaller tanks, despite the disadvantage of the space taken up under the sink.

B) Bacterial growth in the storage tank is dangerous. Disinfecting the tank with chlorine is a correct and effective solution, but it is very difficult to implement for several reasons. It is useful to remember that connecting the system to the sewer may allow bacteria from the sewer to enter the system, no matter what is done to prevent it, as well as that the water standing in the storage tank for a long time without movement requires high-quality disinfection, but:

- 1) There is physical difficulty in injecting chlorine into the tank and keeping it for at least 20 minutes.
- 2) Some bacteria multiply once every 20 minutes, so what's the point of disinfecting every year.

3) There is always a taste of chlorine trapped in the inner rubber of the storage tank, and this is a problem that causes people not to disinfect.

C) Treatment of the water coming out of the tank with UV disinfection. It is clear to us that this water cannot be filtered mechanically due to water pressure problems, and if you decide to do so, you must install an electric water pump, which makes a lot of noise, and the cost of replacing the filter is very high, especially in the case of replacing it regularly.

Regarding the use of UV, it makes more sense but gives poor results in bacteria of soil origin such as Pseudomonas, which is the bacteria that will develop there.

D) The water flowing into a disinfected and sealed tank to prevent the passage of bacteria into the membrane sounds like a good solution, but it is costly and it is a problem to find space for the water tank in private homes.

The right solution: increasing the membrane's output capacity and thereby eliminating the need for a pooling tank. It is very important to lower the price of producing the membranes for the consumer so that he replaces the product once a year. It is indeed possible to lower the cost of the membrane by shortening it from 10" to 3" in length with a diameter of 2.5" or leaving a length of 10" and reducing the diameter to 1". thus, it will last for about a year, also saving the financial cost of the pooling tank and the space it takes up under the sink.

Use of TFC (Thin Film Composite) membrane or instead of CTA (Cellulose Triacetate)

The advantage: the water production capacity will increase.

The disadvantage: the TFC membrane requires chlorinated water.

A) CTA membrane - in recent years we have seen a transition to this membrane since the membrane is made of synthetic materials and does not require chlorine. The water yield capacity is between 85-94%, which is considered relatively low .The active charcoal filter before the membrane removes all the chlorine present in the water and therefore there is no more protection against the development of bacteria, which is why the entrance to the membrane is filled with bacteria. Therefore, the membrane can't last more than two years.

B) TFC membrane - used today mainly by hospitals for the Hemo-dialysis process because of its ability to produce large amounts of water with a good percentage of cleanliness and high membrane life. In my opinion, we must switch to this membrane, which today is made from available and cheap industrial materials. All drinking water is chlorinated so there is no problem there, especially if you want to reduce the membrane and still receive high amounts of water.

Note: if you don't drain water into the sewer, then you don't need the SHUT OFF.

Using SHUT OFF

The advantage: no advantages, but a must-have accessory.

The disadvantage: unreliable and causes water flooding, waste of water due to routing the purified water to the sewer unnecessarily, the cost of the water poured into the sewer, and filters that have reached the end of their lives.

A) It monitors the water tank, and when it is full mechanically closes the water inlet, which is an excellent idea, but the product is not reliable and it happens that good filtered water is endlessly poured into the sewer, so we both waste water and the replacement cost is very expensive.

B) It is externally connected to the filtration system and is therefore convenient for handling and maintenance. The disadvantage is that this item must be replaced every short period of time and before the malfunction begins, therefore its replacement introduces pollutants that end up in the collection tank at the end of the process. This causes dangerous bacteria to grow and damage both human health and the taste of the water.

Note: if you don't drain water into the sewer, then you don't need the SHUT OFF.

The system bin under the sink - it turns out that the volume does not indicate the quality of the water treatment. It consists of 3 vertical filter houses and two more horizontal ones on top of them. Additionally, there are a lot of pipes and a lot of connectors around, and everything is accompanied by a large and heavy water collection tank. With background noises of the water being poured into the sewer and the tank being stopped by the shut-off, it becomes a sound nuisance that we as producers must consider, since environmental silence in the modern world has become a necessity.

Another thing is the theme of the multitude of colored pipes that are rolled up under the sink. I'd like to remind you that this is often the place of the domestic garbage can, which is also a busy place in the house.

Pouring from the filter faucet - we must remember that we are drinking from a water filter that is connected to a water tank on the one end (which, as mentioned earlier, gets easily contaminated), and on the other end my child's drinking glass. This, in my opinion, is an incorrect process and it happens in hundreds of thousands of homes in the US and around the world.

That is why we must understand that when the purified water faucet on the sink is opened, the heart of the osmosis filter (from the storage tank) is exposed to contaminating bacteria that may grow unhindered and become a fatal hazard. Therefore, there must be a real and proven barrier (at the exit of the water from the osmosis) to prevent the growth of microorganisms within the system.

Faucet

That is why we must understand that when the purified water faucet on the sink is opened, the heart of the osmosis filter (from the storage tank) is exposed to contaminating bacteria that may grow unhindered and become a fatal hazard. Therefore there must be a real and proven barrier (at the exit of the water from the osmosis) to prevent the growth of microorganisms within the system.

Using a pouring faucet

The advantage: comfortable on the counter next to the sink, and the color and style can be matched to the rest of the kitchen.

The disadvantage: most faucets are coated with nickel chrome and osmosis water with low PH damage the color as well as the material, and the material may fall into the drinking water. It is worth noting that nickel-chrome is a deadly substance. There are faucets made of stainless steel that do not emit toxins; it is recommended to oblige suppliers to provide only this faucet.

Removing mineral components from drinking water.

The advantage: there are prohibited substances in the drinking water and their removal contributes to health.

The disadvantage: there are healthy substances in the water and their removal harms health

A) Osmosis removes minerals such as magnesium - the importance of magnesium for health is very important especially for heart health for adults and causing nerve diseases for children.

B) Removing iodine from water is dangerous for human health.

Iodine is needed to make the thyroid hormones thyroxine and triiodothyronine, which assist with the creation of proteins and enzyme activity, as well as regulate normal metabolism.

C) Removing minerals affects the taste of water.

D) Removal of minerals such as calcium and magnesium lower the PH of the water and may cause hemolysis and damage to health.

E) The bitter taste of the water prevents children from drinking water instead of drinks with unhealthy ingredients.

F) The quality of the water piping materials and the pouring faucet must be high so as not to introduce bad taste.

Conclusion

It is clear to all of us that very few brilliant minds have been engaged in the field of drinking water treatment compared to the high-tech world for example, since it is a profession that is perceived as low-tech and less "profitable".

On the other hand, we know that water resources in the world are depleting resources. Therefore, I envision that leading and economically successful countries will establish an international and independent body, which will carefully investigate the sources of drinking water pollution and also find a way to stop it in order to allow humanity to survive.

From here I call on everyone who has read this article to stand up and take action; once there is a shortage of drinking water it will harm each and every one of us regardless of age, color, religion, and sex.

You must be asking yourself why I am suggesting this? Well, the shortage of drinking water in the US and around the world leads to creative solutions, for example, the capture of moisture from the air and the desalination of seawater for drinking water. In the long run, the more technological solutions we find for drinking water, the more we will realize that there is no substitute for natural water from rainwater that flows on clean ground and drains into the groundwater, absorbing healthy minerals naturally from the soil layers, as it has been since the first day of creation.

Faced with a shortage of drinking water and having to find a replacement for rainwater, men turned mainly to seawater desalination, which provided only water. But what about the minerals that the human body must receive through water?

Until today we fought to obtain clean water and low TDS. Today, it is clear to us all that the TDS level is not a factor and does not necessarily reflect the quality of water. Values such as the PH, which is an important and necessary component, indicating the presence of important minerals for the health of the body such as magnesium and iodine, are more important.

I believe beyond a shadow of a doubt that future osmosis systems will be adapted to the existing mains water in the consumer's home, and will give the consumer the option to choose the taste of the water, the scale in the water, the necessary minerals, and of course at an affordable price for everyone.

And as for you, the EPA, I sincerely hope that you will find the right requirements and standards to certify osmosis systems, and I very much hope that the worldview of Tipa-Tech will help you in the future.

Sincerely,
Baruch Ziser



TipaTech

LOTUS - The most advanced home water purifier

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Commenter: Jon Sandormirsky
Affiliation: Canature WaterGroup
Comment Date: February 1, 2023

Email Text:

To The Water Sense Team,

Please find attached my comments on behalf of my company.

Thank you!

Jon Sandomirsky, B.A., B.Comm

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Email Attachment:

See pages 9 through 10.

Template for Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Jon Sandomirsky

Commenter Affiliation: Canature WaterGroup U.S.A. Inc.

Date of Comment Submission: Feb 1, 2023

Topic: Efficiency Criteria

Comment: We believe the proposed 30% target for efficiency will not be achievable with current technology without negative implications to membrane life and performance.

Rationale: At a 30% efficiency target, the life of the membrane will be reduced placing the economic burden on the consumer. The potential for reducing the effectiveness for removing health related contaminants is probably the most significant concern.

Suggested Change (or Language): A realistic efficiency target, such as 20% is achievable without the negative implications to membrane life and performance while meeting the objectives of the WaterSense program.

Topic: Labelling Requirements

Comment: Our RO systems are certified to NSF/ANSI 58 and follow the labelling requirements that were developed under this certification standard. Further requirements will provide non-certified RO manufacturers and advantage in the market.

Rationale: There is currently no requirement for RO certification and no standards for the claims made by these companies. These companies would be able to use marketing tactics to gain an unfair advantage by confusing the consumers understanding of the claims.

Additionally, our RO systems are sold through distribution and installed by professionals. The equipment comes in 'brown box' packaging that a consumer will not see as opposed to true point-of-purchase retail packaging. Additional carton labelling requirements would serve no purpose.

Suggested Change (or Language): Do not include labelling requirements and defer to those established by NSF/ANSI 58.

Topic: Membrane Life Test

Comment: This test has not been validated by a 3rd party standard and performance under its criteria is unknown.

Rationale: For this to be included as a mandatory component of the certification criteria much more due diligence needs to occur. At a lower efficiency target such as 20%, membrane life will not become an issue.

Suggested Change (or Language): Drop the test requirement until it can be properly validated.

Commenter: Tom Palkon

Affiliation: International Association of Plumbing & Mechanical Officials (IAPMO)

Comment Date: February 1, 2023

Email Text:

WaterSense Team

IAPMO would like to submit the following comments to the draft specification for point of use reverse osmosis systems.

Thank you for developing version 1.0 of the Draft WaterSense Specification for Point of Use (POU) Reverse Osmosis (RO) Systems. Your team has done an excellent job specifying the important testing requirements for capturing water efficiency information on POU RO systems. We have the following comments on the draft.

- 1. General Requirements – NSF/ANSI 58 (NSF 58) is currently specified in most plumbing codes throughout the US. Since the ASSE 1086 standard was recently published it is now being referenced in many water saving codes and standards such as the Uniform Plumbing Code Appendix L and WeStand. ASSE’s Product Standards Committee is looking to open the standard up for revision so that the group can consider matching the 30% efficiency requirement in the WaterSense specification. Because ASSE 1086 requires the product be certified to NSF/ANSI 58 as a pre-requisite we feel that the specification can reference NSF/ANSI 58 or ASSE 1086 for certification. A company can then choose to certify to NSF 58 and include the additional testing requirements specified in the ASSE 1086 standard for compliance or the company can simply certify the product to ASSE 1086 for compliance. Certification costs can be expensive for companies, and they pass those costs down to the consumer. Allowing certification to ASSE 1086 could eliminate companies from paying file fees for both standards.**

See below for our proposed wording.

NSF/ANSI 58 is the primary standard used in the United States to certify RO systems. This WaterSense specification requires conformance with NSF/ANSI 58 **or ASSE 1086**. This is consistent with requirements for RO systems within the two primary model plumbing codes in the United States.

NSF/ANSI 58 prescribes testing procedures for measuring removal of total dissolved solids (TDS) and requires all systems to reduce TDS by at least 75 percent. TDS, which includes dissolved solids such as minerals, salts, metals, and organic matter in the water, is a common indicator used to determine the general quality of drinking water. TDS percent reduction is a performance metric that is used to quantify an RO system’s ability to reduce drinking water contaminants. By requiring all WaterSense labeled systems to be certified to NSF/ANSI 58 **or ASSE 1086**, the specification ensures that a baseline level of contaminant removal is achieved. The NSF/ANSI 58 **or ASSE 1086** standards also allows for and provides testing methods and requirements for the removal of other more specific contaminants to verify manufacturer reduction claims.

Systems are only required to achieve specified removal rates for a given contaminant if the manufacturer makes a claim that the system is able to reduce that contaminant. See the Performance Criteria section for more information.

2. Water Efficiency Criteria – Your explanation of NSF/ANSI 58 not including a test protocol to capture rinsing events for tankless systems is correct. I'm leading an NSF task force that will be revising the NSF test procedure to capture this membrane rinse water as part of the efficiency claim. Also, the ASSE 1087 standard will capture some of the flushing events during the 20 day test.
3. Water Efficiency Criteria – ASSE's Product Standard's committee has initiated a project to revise the 1086 standard to match the 30% efficiency requirement in the WaterSense specification. Depending on the timing of the revision this will allow the specification to state compliance with ASSE 1086 instead of noting the 40% vs 30% efficiency difference in ASSE 1086 and the WaterSense specification.
4. Membrane Life – Because you are not requiring product certification to the ASSE 1086 standard you may want to include language in this section clarifying product re-testing requirements. Certification bodies re-test products for a variety of reasons, such as test data age, changes to the product, updates to the standard, etc. Since product certification isn't being required for the ASSE 1086 standard, certification agencies may not include the 1086 requirements when considering their re-testing battery for product listed to NSF 58. Consider adding language such as, **this specification does not require certification to the ASSE 1086 standard however certification agencies should consider the ASSE 1086 testing requirements in this specification when they are evaluating any re-testing requirements per their certification policies for the NSF 58 listing.**
5. Water Efficiency Marking – Consider revising this language so that the efficiency rating term is being use for tank type and tankless systems. Introducing the term recovery rating may cause confusion.

See below for our proposed wording.

This specification requires all WaterSense labeled RO systems to include on the packaging and other point-of-purchase product documentation (e.g., product specification sheets, webpage) a statement that clearly indicates the product's efficiency rating (for systems with **or without** a storage tank) **or recovery rating (for systems without a pressurized storage tank)**, along with the associated waste-to- product ratio (i.e., the gallons of water the system will discharge for every gallon of treated water it produces).

Clearly state that the efficiency data required in the marking shall be taken from the NSF 58 testing. The NSF 58 testing will differ from the ASSE 1086 testing. Proposed language is listed below:

In this example, the RO system would send 2.3 gallons of water down the drain for every gallon of permeate it produces and would include the resulting waste-to-product ratio (i.e., 2.3:1) on its packaging and product documentation.

Efficiency Data from NSF 58 shall be used for the EPA WaterSense label.

6. Water Efficiency and Performance at a Glance Table – Update the NSF 58 Minimum Required Reduction requirements using the lowest allowable influent value from the range.
 - a. Arsenic – 96.3%
 - b. Chromium – 63.0%
 - c. Lead – 96.3%
 - d. Nitrate/nitrite – 63.0%
 - e. PFOA/PFOS – 94.8%

Include a statement in this section that companies can add additional claims to this table in the same format, the table must include these five but may include additional claims that have been tested and certified.

Include language that states certified claims can be made by the membrane only or by using the allowed treatment train options in Normative Annex 2 of NSF 58. This will allow certified claims on the prefilter, post filter and membrane to be included on the Water Efficiency and Performance at a Glance Table. IAPMO plans to include chemical reduction claims made by the pre and post filters on our NSF 58 listings to make it easier for consumers and WaterSense to understand which contaminant reduction claims the product has been certified to reduce.

Consider using the 50 ppb influent level or the 300 ppb influent level for the arsenic reduction claim instead of only the 300 ppb level. I believe that all POU ROs that make an arsenic claim are listed at the 50 ppb level and most waters contaminated with arsenic are at the lower level. Unfortunately, the 300 ppb level typically requires a treatment train test or booster pump to reduce the effluent below 10 ppb. If this recommendation is accepted the NSF 58 Minimum Required Reduction will need to be modified appropriately in the table along with a note concerning the different allowable influent tests.

We appreciate all the work that has gone into developing this specification and look forward to seeing the final document released.

Best regards,

Tom Palkon
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ASSE International – Executive Director
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Commenter: Eric Yeggy
Affiliation: Water Quality Association (WQA)
Comment Date: February 2, 2023

Email Text:

Please find attached written comments from me on behalf of the Water Quality Association.

[Eric Yeggy](#) | [Director of Technical Affairs](#) | [Water Quality Association](#)

📍 2375 Cabot Drive | Lisle, Illinois 60532 | 📞 630-929-2539 or 630-505-0160, ext. 539



Plan now to join us for the WQA Convention & Exposition in Las Vegas April 18-20, 2023 (*WQA Business Boot Camp April 17th*). Learn more [here](#).

Email Attachment:

See pages 15 through 18.

Template for Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Eric Yeggy

Commenter Affiliation: Water Quality Association (WQA)

Date of Comment Submission: February 2, 2023

I would like to thank the EPA for this important proposal, and I share the EPA's interest in promoting water conservation. I made a concerted effort to gather feedback on the EPA's draft proposal from RO manufacturers and other industry representatives. The comments I am submitting below on behalf of the Water Quality Association are a reflection of the compilation of feedback I received from the industry.

Topic:

Efficiency criteria

Comment:

An overwhelming majority of RO manufacturers that submitted comments to WQA expressed concern that the 30% target for efficiency is too aggressive because it would result in significant trade-offs for consumers in terms of membrane-life, and for the effectiveness of their POU RO devices to remove health-related contaminants.

States and regions which suffer from water shortages could make this program mandatory. And this would be harmful to small systems and private well owners that rely on POU RO treatment to remove health related contaminants.

The goal of the WaterSense program is that WaterSense labeled products should use 20% less water overall than the typical non-WaterSense labeled alternative. Per my estimation the typical POU RO system currently sold in the U.S. market has an efficiency rating of around 15%, and the consensus of industry feedback supported my estimate. If the EPA were to target an efficiency rating of 20% for WaterSense labeled RO systems this would result in an overall water savings of 25% for every 1000 gallons of treated water produced when compared to non-WaterSense labeled RO systems.

In the supporting statement for the draft specification, EPA states "*A typical POU RO system sends five gallons of water or more down the drain for every gallon of treated water that it produces.*" Using the calculations from NSF/ANSI 58 this would equate to an efficiency rating of 17%. Using this 17% estimate from the EPA, a target efficiency rating of 22% for WaterSense labeled RO systems would result in more than a 20% overall water savings when compared to non-WaterSense labeled RO systems.

I have attached a spreadsheet demonstrating these water savings calculations.

I feel that either of these target values (20% or 22%) would be more realistic for the industry to currently achieve without significant trade-offs in membrane life-span and without causing

unintended consequences for small systems and private well owners that rely on POU RO systems to remove health-related contaminants from drinking water.

Rationale:

Based on our knowledge of RO systems, and feedback from the industry, the currently proposed efficiency target of 30% would result in significant trade-offs for the removal of some health-related contaminants such as nitrate, and significant trade-offs in membrane life-span.

Suggested Change (or Language):

I urge the EPA to adopt a realistic efficiency target (e.g., 20% to 22%) which will still meet the objectives of the WaterSense program, but which most of the industry would currently be capable of meeting without causing significant trade-offs for the consumer and protection of public health.

Topic:

Membrane-Life Test

Comment:

This test is not in standard NSF/ANSI 58 and has not been thoroughly vetted by the industry. I sought out industry members and manufacturers who could provide data from the membrane life test because I wanted to understand how systems currently on the market will perform under this test. I could not find any data. Nor could I find any evidence that this method has been validated through testing in multiple independent laboratories.

For these reasons an overwhelming majority of RO manufacturers do not support including this test as a mandatory requirement.

Rationale:

This test needs to be vetted by testing on multiple different POU RO systems, and through multiple independent laboratories before inclusion in a specification of this importance.

No manufacturers were able to provide me with test data supporting the accuracy or repeatability of this test, or to characterize how current RO systems might perform against this test. This technology has been in use for many decades and membrane life span is not currently an issue. During the 2018 WQA convention and exposition there was a presentation from three different manufacturers on the topic of "Innovations in Residential RO Recovery". The consensus of the presenters at that time was that membranes are typically replaced every 5-10 years. The EPA should contact me if access to this presentation would be helpful.

This membrane-life test is unnecessary if the EPA sets a more realistic efficiency rating target of 20 to 22% which a significant portion of the industry already achieves without negative trade-offs related to membrane-life span.

Suggested Change (or Language):

I feel the EPA should drop this test from the initial specification requirements and instead seek validation of the test method across multiple independent laboratories, using currently available POU RO systems. Once this information is available, I would support reconsidering the inclusion of this test in future specification revisions.

Topic:

Labeling of non-certified claims

Comment:

While I support the concept of helping consumers understand the differences and trade-offs between various POU RO models, I believe the requirement for manufacturers to label non-certified claims will have the opposite effect by creating confusion. An overwhelming majority of the manufacturers do not support this requirement for this reason.

The primary concern is that non-participating manufacturers could exploit this requirement and use it to confuse consumers. For example, in most of the U.S. marketplace there is nothing which requires manufacturers to have their claims certified by a third-party. Therefore, a non-participating manufacturer can make an arsenic claim even if their system does not remove arsenic adequately to meet the requirements in NSF/ANSI 58. The labeling proposal in the draft WaterSense specification could therefore be used to further compel consumers to believe that the non-certified system is superior.

Rationale:

The requirement to label non-certified claims will cause confusion in the market place. With a bit of imagination one can envision multiple ways that this requirement could be exploited by non-participating companies in order to gain a competitive advantage.

The existing labeling requirements in NSF/ANSI 58 were developed by a broad committee of stakeholders representing diverse interests beyond the water treatment industry, they have been thoroughly vetted through decades of use, and are regularly reviewed and updated to help consumers and end-users.

Suggested Change (or Language):

Drop the requirement to label non-certified claims.

15 Percent

Average current POU RO	1000.00	Gallons of product water needed per year (Std 1086 estimates this as 1000 g)
	15%	Rated efficiency of the average POU RO
	6666.67	Total water used to produce 1000 if rated efficiency is 15%
	5666.67	Reject water generated to produce 1000 gallons of treated water if rated efficiency is 15%
WaterSense Labeled POU RO	1000.00	Gallons of product water needed per year (Std 1086 estimates this as 1000 g)
	20%	Rated efficiency target for WaterSense labeled POU RO
	5000.00	Total water used to produce 1000 if rated efficiency is 20%
	4000.00	Reject water generated to produce 1000 gallons of treated water if rated efficiency is 20%
	1666.67	Water saved per 1000 gallons of treated water produced
	1666.67	Reduction in reject water per 1000 gallons of treated water produced
	25%	Reduction in overall water used to produce 1000 gallons of treated water
	29%	Reduction in the amount of reject water generated to produce 1000 gallons of treated water

17 Percent

Average current POU RO	1000.00	Gallons of product water needed per year (Std 1086 estimates this as 1000 g)
	17%	Rated efficiency of the average POU RO
	5882.35	Total water used to produce 1000 if rated efficiency is 17%
	4882.35	Reject water generated to produce 1000 gallons of treated water if rated efficiency is 17%
WaterSense Labeled POU RO	1000.00	Gallons of product water needed per year (Std 1086 estimates this as 1000 g)
	22%	Rated efficiency target for WaterSense labeled POU RO
	4545.45	Total water used to produce 1000 if rated efficiency is 22%
	3545.45	Reject water generated to produce 1000 gallons of treated water if rated efficiency is 22%
	1336.90	Water saved per 1000 gallons of treated water produced
	1336.90	Reduction in reject water per 1000 gallons of treated water produced
	23%	Reduction in overall water used to produce 1000 gallons of treated water
	27%	Reduction in the amount of reject water generated to produce 1000 gallons of treated water

Commenter: Tedd Schneidewend
Affiliation: Culligan International
Comment Date: February 2, 2023

Email Text:

Hello,

Please see attached for comments and recommendations for Watersense as it relates to RO systems from Culligan International. Any questions please let me know.

Best Regards,

Tedd Schneidewend
Engineering Manager
Culligan International | Phone: 920-213-8682

Email Attachment:

See pages 20 through 21.

Template for Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Tedd Schneidewend

Commenter Affiliation: Culligan International

Date of Comment Submission: 02/02/2023

Topic: Efficiency

Comment:

- 30% is a nice target, but would limit the industry and could have negative impacts on the consumer related to increased system cost and reduced rejection of harmful contaminants.

Rationale:

- Currently most products cannot meet a 30% efficiency. However, 30% will be more achievable as technology improves or with the addition of a booster pump.
- Risk is that manufacturers/systems will sacrifice water quality and/or membrane life in order to meet high efficiency levels.
- Sacrificed membrane life drives up landfill waste and overall installed cost to the consumer over the life of the system.
- There is a health risk to consumers if municipalities or states require watersense, and the watersense certified systems have sacrificed water quality to gain higher efficiencies. Consumers may not be getting adequate protection from harmful and hard to reject contaminants.

Suggested Change (or Language):

- Culligan recommends a progressive improvement starting at 20% and increasing to 30% after 5+ years.
-

Topic: ASSE 1086

Comment:

Culligan recommends suspending the requirement of ASSE 1086 for additional peer review and updates if needed

Rationale:

- We are currently not aware of any system that is certified to 1086, which puts in question the validity of the standard.
- 1086 was originally intended for a challenge test and not a qualification test (needs additional review)

Suggested Change (or Language):

- Remove this requirement until an industry committee is allowed to review the standard and make recommended changes. Allow for testing and review by certified labs to ensure the standard can be used for Watersense. Additionally, there should be multiple manufacturers certified to the standard before it is incorporated into Watersense.

Topic: Tankless RO

Comment:

- We would recommend that Tankless ROs are not able to get watersense until Tankless ROs efficiency testing is updated in NSF 58

Rationale:

- Many Tankless ROs would pass as it is written today, but the standard currently does not account for flushing

Suggested Change (or Language):

- Specify that a Tankless RO system is not able to be certified to Watersense until an update to NSF 58
 - Updates should include flushing from the system and an update to the NSF 58 efficiency test

Commenter: Ryan Moore

Affiliation: New York State Energy Research and Development Authority (NYSERDA)

Comment Date: February 3, 2023

Email Text:

To whom it may concern,
Please find attached in both Word and PDF, NYSERDA's comments to the Point-of-Use Reverse Osmosis Systems. Thank you for the opportunity for NYSERDA to weigh-in on this specification. If you have any questions or concerns, please e-mail or call me at the number below.

Thanks again,
Ryan

Ryan Moore

Project Manager
Codes, Products, and Standards

NYSERDA

17 Columbia Circle | Albany, NY 12203-6399

P: 518-862-1090 x3267 | F: 518-862-1091 | E: ryan.moore@nysesda.ny.gov

nysesda.ny.gov

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Email Attachment:

See page 23.

Template for Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Chris Corcoran

Commenter Affiliation: New York State Energy Research and Development
Authority (NYSERDA)

Date of Comment Submission: February 3, 2023

Topic: Support program development

Comment: NYSERDA supports WaterSense in developing a specification and program for point-of-use reverse osmosis systems.

Rationale: Reverse Osmosis (RO) systems are a growing market as the concern of water contaminants rises. Health concerns related to lead¹ and Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)² in drinking water has resulted in increased interest in point-of-use (POU) filtration systems. A certification program for these products will support consumers in selecting more water efficient products. As products certify to this specification, product and market data will be provided to EPA which will allow for a better understanding of the market conditions for subsequent specifications.

Suggested Change (or Language): NA

Topic: 30 Percent Efficiency Level

Comment: Can EPA provide more background on how the 30 percent efficiency level was selected?

Rationale: The Draft Specification for Point-of-Use Reverse Osmosis Systems Supporting Statement implied that the 40 percent efficiency level in ASSE 1086, *Performance Requirements for Reverse Osmosis Water Efficiency – Drinking Water criteria*, may be too high; EPA received this comment from stakeholders on its Notice of Intent (NOI) and there has been little uptake in the RO system industry to certify to the specification. While 40 percent may be too high, can EPA provide more information about how it arrived at the 30 percent efficiency level based on the current market?

Suggested Change (or Language): NA

¹ Lead contamination is typically caused by lead service lines, more information is available here: <https://www.health.ny.gov/environmental/water/drinking/lead/>

² <https://www.epa.gov/pfas/pfas-explained>

Commenter: John Keener
Affiliation: Toledo Water Conditioning
Comment Date: February 3, 2023

Email Text:

Good morning.

Attached find my comments regarding the WaterSense reverse osmosis efficiency program.

Thank you,

John Keener – Master Water Specialist (WQA)
Toledo Water Conditioning
2806 Nebraska Ave
Toledo, Ohio 43607
419-536-7936
john@toledowater.com



Email Attachment:
See page 25.

Template for Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: John Keener, Master Water Specialist – Water Quality Association (WQA)

Commenter Affiliation: Toledo Water Conditioning - Water treatment dealer, chairman of the Water Quality Association Water Sciences Committee, with 40+ years' experience in the water treatment industry.

Date of Comment Submission: 2-3-23

Topic: efficiency of reverse osmosis systems for WaterSense designation

Comment: I am very pleased that the EPA is developing the WaterSense program to help the public understand the importance of water conservation and to reward equipment manufacturers with valuable designation.

I am concerned that the goal of the WaterSense program to improve the efficiency of RO systems, while noble, may be too aggressive even at 30% efficiency. The 40% efficiency would certainly be counter productive in that it would shorten the productive life and reduce the efficacy of the membrane, requiring more frequent service with membrane replacement and therefore higher consumer cost.

Rationale: Reverse Osmosis Systems are an extremely important method of providing high quality water to consumers while virtually eliminating the need for small serving (sports) bottles.

The wastewater from the RO system is not destroyed; it simply discharges down the drain. Water is never truly “wasted”.

Attempts to make RO systems too efficient may have unforeseen and unintended consequences. The public has a visceral realization of all the unwanted contaminants in our drinking water. A reverse osmosis system has to be able to reject a cornucopia of dangerous impurities such as lead, algal toxins, nitrates, chromium6, and other emerging contaminants.

If the WaterSense program is too aggressive it may actually be an anti-consumer friendly program - by increasing the cost of ownership and reducing the overall water quality available to users. Membranes do not simply fail catastrophically like a flat tire on an automobile, but they slowly become less effective. Maintaining high quality water with lower long term cost should be the goal of this program.

Suggested Change (or Language): The WaterSense designation should be given to RO systems that are 20% (or 25%) efficient and not 30% which, would be excessive.

Commenter: Joshua Greene
Affiliation: A. O. Smith Corporation
Comment Date: February 3, 2023

Email Text:

Ms. Veronica Blette, Chief
EPA WaterSense Program Branch

Dear Ms. Blette,

A. O. Smith appreciates the opportunity to submit these comments to the U.S. Environmental Protection Agency (“EPA”) WaterSense® Program (“WaterSense” or “Program”) regarding its request for comment on its Draft Specification for Point-of-Use Reverse Osmosis Systems Version 1.0 (“Draft”). The Company is a participant in the ENERGYSTAR® program having received multiple Partner of the Year awards for its high-efficiency water heating equipment and appreciates the value that the ENERGYSTAR® label commands in the marketplace. We are optimistic that a WaterSense label for the Company’s point-of-use reverse osmosis water treatment systems will be of similar value.

While supportive of the Draft, A. O. Smith recommends that the Program table further consideration of the Draft until such time as the NSF/American National Standard Institute (ANSI) joint technical committee approves and publishes its ensuing update to the NSF 58 *Reverse Osmosis Drinking Water Treatment Systems* standard later this calendar year. This action would afford manufacturers greater business certainty regarding their NSF 58 certified reverse osmosis drinking water systems and avoid marketplace and consumer confusion surrounding these products.

Once again, A. O. Smith appreciates the opportunity to submit these comments to the U.S. Environmental Protection Agency (“EPA”) WaterSense® Program (“WaterSense” or “Program”) regarding its request for comment on its Draft Specification for Point-of-Use Reverse Osmosis Systems Version 1.0 (“Draft”). The Company remains supportive of establishing a WaterSense specification for point-of-use reverse osmosis water treatment systems. As outlined above, the Company does have some concerns with the Draft’s proposed requirements which may be rectified with the ensuing revisions to NSF/ANSI 58. In the interim, A. O. Smith would welcome the opportunity to work with the WaterSense Program as it continues its evaluation of the proposed specification.

Best Regards,

Josh Greene

Joshua C. Greene, Esq.

Corporate Vice President – Government, Regulatory, and Industry Affairs | A. O. Smith Corporation

e: jcgreene@aosmith.com | o: 202 750-7515 m: 301-325-1315

i: www.aosmith.com

a: World Headquarters - 11270 West Park Place, Milwaukee, WI 53224

a: DC Office – 440 First Street, NW Suite 450, Washington D.C. 20001



Email Attachment:
See pages 28 through 33.



February 3, 2023

Ms. Veronica Blette, Chief
EPA WaterSense Program Branch
E-mail: watersense-products@erg.com

Re: A. O. Smith comments on the WaterSense® Draft Specification for Point-of-Use Reverse Osmosis Systems Version 1.0.

Dear Ms. Blette,

A. O. Smith Corporation (“A.O. Smith” or “Company”), with global headquarters in Milwaukee, Wisconsin since 1874, is a global leader in applying technology and energy-efficient solutions to products manufactured and marketed worldwide. Listed on the New York Stock Exchange (NYSE: AOS), the company is one of the world’s largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products.

A. O. Smith appreciates the opportunity to submit these comments to the U.S. Environmental Protection Agency (“EPA”) WaterSense® Program (“WaterSense” or “Program”) regarding its request for comment on its Draft Specification for Point-of-Use Reverse Osmosis Systems Version 1.0 (“Draft”). The Company is a participant in the ENERGYSTAR® program having received multiple Partner of the Year awards for its high-efficiency water heating equipment and appreciates the value that the ENERGYSTAR® label commands in the marketplace. We are optimistic that a WaterSense label for the Company’s point-of-use reverse osmosis water treatment systems will be of similar value.

While supportive of the Draft, A. O. Smith recommends that the Program table further consideration of the Draft until such time as the NSF/American National Standard Institute (ANSI) joint technical committee approves and publishes its ensuing update to the NSF 58 *Reverse Osmosis Drinking Water Treatment Systems* standard later this calendar year. This action would afford manufacturers greater business certainty regarding their NSF 58 certified reverse osmosis drinking water systems and avoid marketplace and consumer confusion surrounding these products.

Overview

As cited above, A. O. Smith supports the EPA establishing a criteria specification for point-of-use (“POU”) reverse osmosis (“RO”) water treatment systems under its WaterSense Program. The Company agrees with the Program’s assertion that a WaterSense specification for this product category will enhance the market for more water-efficient RO systems that continue to provide adequate and reliable contaminant removal.¹ Moreover, the Company also agrees that a specification for these products will help consumers who already intend to purchase an RO system identify those models that are both water-efficient and high-performing.² The Company is also encouraged that the Draft leverages the NSF 58 Standard for *Reverse Osmosis Drinking Water Treatment Systems* as the foundation and baseline criteria for the proposed specification and recommends the Program to focus on water efficiency criteria, which is of most value to consumers. The success of the WaterSense program is in large part based on the premise that it provides trusted and credible information that highlight products that deliver real water savings, while continually adapting to a changing marketplace. This is evident by the thousands of WaterSense labeled models of products across broad applications, which speaks to the strength of the Program to date.³ Lastly, the Company would, however, caution that in finalizing a specification for POU RO systems, that the Program not set unduly burdensome or duplicative criteria requirements, which may have the unintended consequence of restricting the number of systems that could qualify for the Program and diminish consumer choice.

General Requirements

A. O. Smith supports the Draft’s reliance on the NSF/ANSI 58 Standard as the general foundational requirements for the specification, including the proposed product definitions in NSF/ANSI 330 *Glossary of drinking water treatment unit terminology*,⁴ as well as the exclusion of Components; Point-of-Entry RO systems; and RO system add-on devices, accessories, or aftermarket companion products. The Company does recommend that any final specification maintain consistency regarding the requirement that covered systems be (third-party) certified – as expressly stated in the Requirements for WaterSense Labeling.⁵ The Draft uses the terms “tested;” “verified;” and “certified” interchangeably. Considering that NSF/ANSI 58 requires third-party certification this should be clearly understood in the specification.

Water Efficiency Criteria

A. O. Smith recommends the Program to solely utilize an Efficiency Rating for qualifying POU RO systems. An efficiency rating metric is more meaningful to a consumer as it intuitively communicates a key value of the product – water savings – while at the same time providing a more accurate operational metric by which consumers can make an informed purchasing decision. A. O. Smith is supportive of the Draft’s proposed minimum 30% efficiency rating. A recovery rating metric, while part of the NSF 58 standard, is not meaningful to a consumer. Moreover, given the differences in how a recovery rating is derived (e.g., neither back pressure from a tank or water used for membrane flushing, among other

¹ WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems Cover Letter, December 2022, page 1.

² WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems Supporting Statement, page 2.

³ RO Systems Draft Specification Public Meeting Presentation, January 12, 2023, slide 10.

⁴ WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems, page 1.

⁵ Id. At page 6.

items, are incorporated into the recovery rating method of the test), the rating will always be greater (on a percentage basis) than an efficiency rating. In addition, a recovery rating is typically used for systems that do not have a storage tank. Therefore, as currently drafted, including a minimum efficiency and recovery rating of 30% for a system with a storage tank and only a minimum recovery rating of 30% for a system without a tank seem incongruous and may lead to consumer confusion. Moreover, it is the Company's understanding that the distinction between systems with and without tanks will be addressed in the ensuing changes to NSF/ANSI 58 as well as additional clarity on the continued value of the recovery rating metric. Establishing a level testing playing field that treats tank and tankless systems equally is a key step forward and further supports the Company's recommendation that the Program should table further consideration of the Draft specification ahead of the publication of the revised NSF 58 standard.

Performance Criteria

Consistent with its previous references, A. O. Smith agrees with the Program that NSF/ANSI 58 is the primary standard used in the United States to certify RO systems and supports the WaterSense Draft specification requiring conformance with NSF/ANSI 58.⁶ The Company also agrees that NSF/ANSI 58's requirement that certified RO systems remove total dissolved solids (TDS) by at least 75 percent is an appropriate performance metric used to quantify an RO system's ability to reduce drinking water contaminants and verify manufacturer reduction claims. A. O. Smith agrees with the Program that from a consumer's perspective, the ideal RO system substantially reduces drinking water contaminants, is easy to maintain, and provides assurances that a consumer's drinking water is adequately treated.⁷

A. O. Smith does not however support the inclusion of the ASSE 1086 standard *Performance Requirements for Reverse Osmosis Water Efficiency* to evaluate membrane life. First, requiring both certifications is duplicative considering that the Draft is proposing minimums of 30% efficiency and recovery ratings certified to NSF/ANSI 58. Second, membrane life, while important, is adequately addressed in the NSF/ANSI 58 standard, which is why a separate membrane life certification is absent from the standard. Third, the variables associated with "challenged" water, and/or conditions, under the ASSE 1086 test method can lend to inconsistent results as no single test can account for every water condition (e.g., fouling), hence arriving at a consistent reliable benchmark to measure longevity of the membrane is ephemeral. Fourth, the cost of this additional certification is burdensome to product manufacturers and only adds cost to the product, which results in a higher end price to the consumer for little long-term benefit. The Program acknowledges some of these variables with ASSE 1086 noting that the percent recovery, as determined through the ASSE 1086 membrane life test, is not necessarily equivalent to the NSF/ANSI 58 recovery rating or efficiency rating.⁸ Again, requiring ASSE 1086 as part of a final specification would be duplicative and add unnecessary costs to the certification process of WaterSense labeled POU RO products.

Packaging and Documentation Requirements

A. O. Smith generally supports the Draft's proposed packaging and documentation requirements as outlined in Section 5.0.⁹ However, the Company recommends that refinements to the Draft should

⁶ WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems Supporting Statement, page 4.

⁷ Id. At page 7

⁸ Id. At page 8

⁹ WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems, page 2.

be made that would provide greater consistency with NSF/ANSI labeling requirements, as well as provide product manufacturers more flexibility on what information should be required on consumer facing packaging, which is extremely limited, versus information that can be included in a product's manual and/or Performance Data Sheet (PDS). Some of these issues will be addressed once the revised NSF/ANSI 58 standard is published, in the interim the Company would point out the following items:

1. Definitions for efficiency/recovery differ from what is required in NSF/ANSI 58. As a result, product manufacturers would need to include these definitions along with what is required in NSF/ANSI 58 which could be confusing for the customer.

WaterSense Draft:

For a system with a storage tank: "This system is certified to achieve a XX% efficiency rating in the production of treated water. This means that it will send Y.Y gallons of water down the drain for every gallon of treated water it produces."

For a system without storage tank: "This system is certified to achieve a XX% recovery rating in the production of treated water. This means that it will send Y.Y gallons of water down the drain for every gallon of treated water it produces."

NSF/ANSI 58:

"Efficiency rating means the percentage of the influent water to the system that is available to the user as RO treated water under operating conditions that approximate typical daily usage."

"Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as RO treated water when the system is operated without a storage tank or when the storage tank is bypassed."

2. NSF/ANSI 58 requires that the system's efficiency rating is stated, whereas the recovery rating is optional. Only using the recovery rating for a system without a tank will confuse consumers.

3. NSF/ANSI 58 only requires efficiency/recovery be defined in the product manual or PDS, whereas the WaterSense Draft would require this information on the packaging as well. As referenced earlier, there is limited space on packaging and short of making packaging larger – which is wasteful and in A. O. Smith's view counterproductive to its ESG and sustainability goals – information that is meaningful and more readily understood to a consumer, should be on packaging.

4. Regarding the Draft's language on verified contaminant removal rates, the Draft states *"If the system does not have verified reduction claims for any of the above contaminants (i.e., Arsenic (pentavalent) at a concentration of 300 parts per billion (ppb); Chromium (hexavalent and trivalent); Lead; Nitrate/nitrite; or Perfluorooctanoic acid (PFOA)/perfluorooctane sulfonate (PFOS) the packaging and documentation shall clearly indicate that the product has not been certified to remove these contaminants."* As a general matter, we appreciate the balance that must be found in product labeling to avoid consumer confusion. However, labeling a product for something it is not certified to can also be confusing. That said, and to clarify, pentavalent arsenic is listed at 300 ppb, but what about concentrations at 50 ppb? In addition, the other contaminants do not have a concentration level, is that purposeful?

5. Regarding the Draft's table¹⁰ (see below), product manufacturers already include a Performance Data Sheet table with their products that contains the same information although formatted slightly differently. Moreover, most product manufacturers' packaging does not list all the requirements contained in the NSF/ANSI standards as that information is more suitable for product manuals as well as current PDS tables. To have product manufacturers change the formatting of their PDS tables and labelling for WaterSense-only products seems arbitrary and unnecessary so long as the same information is communicated to the consumer. Finally, the Company recommends one slight change regarding Chromium. The Draft's table lumps hexavalent and trivalent Chromium together notwithstanding that each has separate required reduction percentages [per NSF/ANSI 58?] that should be listed in the table.



Water Efficiency and Performance at a Glance		
Water Use		
This system is certified to achieve a XX% [efficiency rating/recovery rating] in the production of treated water. This means that it will send Y.Y gallons of water down the drain for every gallon of treated water it produces.		
Contaminant Removal		
Contaminant	NSF 58 Minimum Required Reduction	Actual Reduction
Arsenic ¹	96.7%	% Removal/Not Tested
Chromium ²	66.7%	% Removal/Not Tested
Lead	96.7%	% Removal/Not Tested
Nitrate/nitrite	66.7%	% Removal/Not Tested
PFOA/PFOS ³	95.3%	% Removal/Not Tested
<ul style="list-style-type: none"> All contaminant removal claims listed above are verified through NSF/ANSI 58 testing Contaminants listed as "Not tested" have not been verified for removal under NSF/ANSI 58 All contaminants reduced by this system are listed in the performance data sheet Not all contaminants listed may be present in the water 		
¹ Pentavalent, at a concentration of 300 parts per billion (ppb)		
² Hexavalent and trivalent		
³ Perfluorooctanoic acid/perfluorooctane sulfonate		

¹⁰ WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems, page 4.

Conclusion

Once again, A. O. Smith appreciates the opportunity to submit these comments to the U.S. Environmental Protection Agency (“EPA”) WaterSense® Program (“WaterSense” or “Program”) regarding its request for comment on its Draft Specification for Point-of-Use Reverse Osmosis Systems Version 1.0 (“Draft”). The Company remains supportive of establishing a WaterSense specification for point-of-use reverse osmosis water treatment systems. As outlined above, the Company does have some concerns with the Draft’s proposed requirements which may be rectified with the ensuing revisions to NSF/ANSI 58. In the interim, A. O. Smith would welcome the opportunity to work with the WaterSense Program as it continues its evaluation of the proposed specification.

Best Regards,

A handwritten signature in black ink, appearing to read "Joshua C. Greene". The signature is fluid and cursive, with a long horizontal stroke at the end.

Joshua C. Greene, Esq.
Corporate Vice President, Government and Industry Affairs
A. O. Smith Corporation
Global Headquarters
11270 West Park Place
Milwaukee, WI 53224
jcgreene@aosmith.com

Commenter: Sean Caughron
Affiliation: Chester Paul Company
Comment Date: February 3, 2023

Email Text:

Please see my comments attached.

Don't hesitate to reach out if you need any clarity.

Sean Caughron

VP Division Manager

Chester Paul Company *a division of Elbi of America*

Office: (323) 245-3761 (800) 227-2093 | Cell: (818) 913-3468

[1210 N Red Gum Street | Anaheim, CA 92806](https://www.chesterpaul.com)

www.chesterpaul.com



Email Attachment:

See pages 35 through 36.

Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Sean Caughron

Commenter Affiliation: Active in residential reverse osmosis professional channels (wholesale) system design, component sales and system sales.

Date of Comment Submission: 02.03.23

Topic: efficiency target percentage

Comment: , if its less than 30% I don't think its worth the change and just adds a layer of confusion for the consumer and a layer of non-sense for the industry. With the membrane technology available today 30% is a very realistic number and should be the minimum target.

Rationale: North American water is tame compared to India and China all global membrane manufactures are building products and systems to operate in tough conditions. By using products designed to withstand very challenging water in a relatively "clean" source in north America we can benefit with extra efficiency. The element pricing is no different than the lesser quality or older technology on the market today.

Suggested Change (or Language):

Topic: 58 / 1086 - Certification

Comment: This has become way to confusing.....We need one certification that can carry both heath standards and efficiency. You cant use the 58 test criteria to test membrane life or long term efficiency. I think we need to get real conformation and clarity from all three certification groups how they would test these so we can walk away with out spending way to much in certification.

Rationale: additional layers of certification is expensive and time consuming, not good for consumers or manufactures.

Suggested Change (or Language):

Topic: Listing Health Claims

Comment: Having manufactures list what the product is not certified to remove is backwards, no industry is doing this. Even bottled water is not listing what is not removed from the water. Combining health claim certification and efficiency is getting very expensive and will get passed to the consumer. I think these are different topics and should be handled as such.

Rationale:

Suggested Change (or Language):

Topic: Membrane Life test

Comment: This is a must and must be done with the 1086 challenge water or similar otherwise your 30% efficiency rating is just a joke and all of us can pass standard 58 with ease and with great efficiency however these systems would fail in the real world. If you have standard 58 testing with out the 1086 challenges the entire “efficiency program” is a fake claim to consumers. ule will not simulate real world efficiency and life.

Rationale: 58 challenge water and a short test schedule is not a real world environment for efficiency

Suggested Change (or Language): 1086 challenges are ideal; to simulate a 1 year life in the field.

Commenter: Andrew Morris and Ron Burke
Affiliation: Alliance for Water Efficiency
Comment Date: February 3, 2023

Email Text:

Please find AWE's comments attached. Thank you.

Andrew D. Morris | [Senior Manager of Policy and Programs](#)
Alliance for Water Efficiency
e: andrew@a4we.org
p: 770-906-1888
w: www.allianceforwaterefficiency.org

Email Attachment:

See page 38.

Public Comment Submission on WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems

Commenter Name: Ron Burke

Commenter Affiliation: Alliance for Water Efficiency

Date of Comment Submission: February 3, 2023

Topic: Increased water use from RO systems in general

Comment: If WaterSense decides to move forward with a specification for RO systems, then product labeling and messaging should be considered to inform consumers that RO systems, whether WaterSense labeled or not, increase water use. Consumers may not be aware that for each gallon of useable water they get from the RO system, some multiple of that volume of water goes down the drain.

Rationale: Consumers need clear information on water use when considering the purchase of an RO system.

Suggested Change (or Language): Any product labeling and messaging requirements should be developed in conjunction with RO system manufactures and tested with consumers on a trial basis.

Commenter: Adam Carpenter
Affiliation: American Water Works Association
Comment Date: February 3, 2023


Email Text:

Good afternoon!

Please find feedback on the WaterSense draft specification on RO point of use systems from the American Water Works Association Attached. Please do not hesitate to reach out for any questions or if there's any other way we can be of assistance.

Thank you!

Sincerely,

Adam T. Carpenter, PhD (he / him / his)
Manager of Energy and Environmental Policy
American Water Works Association
Direct +1 202.326.6126
acarpenter@awwa.org | www.awwa.org
 [LinkedIn profile](#)



Email Attachment:

See pages 40 through 42.



**American Water Works
Association**

Dedicated to the World's Most Important Resource™

Government Affairs Office
1300 Eye Street NW
Suite 701W
Washington, DC 20005-3314
T 202.628.8303
F 202.628.2846

February 3, 2023

Veronica Blette
Chief, WaterSense Branch
Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

RE: Notice titled "WaterSense Draft Specification for Point-of-Use Reverse Osmosis Systems"
(December 2022)

Dear Ms. Blette:

The American Water Works Association (AWWA) appreciates the opportunity to comment on the draft WaterSense Speciation titled "Point-of-Use Reverse Osmosis Systems"¹

Concerns around improper application of label

WaterSense has a well-established reputation that has rightly become associated with water savings (e.g., WaterSense labeled appliances, WaterSense labeled homes, etc.) AWWA routinely supports WaterSense in multiple capacities. Water utility conservation programs frequently use WaterSense labeled products as a basis for determining product eligibility (e.g., which toilets or showerheads are eligible for conservation rebates). Manufacturers and retailers alike utilize and promote WaterSense to help customers save money and reduce water usage, and much of the public is aware that the WaterSense label means they will be saving water and consequently saving money throughout a product's lifetime.

As discussed in detail in the supporting statement for the draft specification, a byproduct of reverse osmosis is the generation of both "rejected" water and the usable "permeate". Anywhere from 1-5 gallons (or more) of rejected water is generated for every gallon of water that is ultimately produced for use (permeate). WaterSense's argument for developing a label in this case is that the use of a high-performance RO system (rejecting perhaps 1 or 2 gallons rejected per gallon of permeate) will "save" water relative to those rejecting high amounts (4-5 gallons or more per gallon of permeate). However, a home without an RO system, that is most homes, will not be wasting RO reject water, and consequently, use less water than a home with similar uses but with an installed in-home RO treatment system. Therefore, there is a critical decision as to whether or not RO treatment should be installed at all². The

¹ <https://www.epa.gov/watersense/point-use-reverse-osmosis-systems>, containing the draft cover letter, draft specification, and draft supporting statement.

² Although there is the possibility that point of use RO systems could be used for Safe Drinking Water Act compliance in limited situations such as those described on page 11 of the support document (in which case they would be required), those situations are likely to be limited and thus this decision-point is applicable to most situations.

same situation does not apply for most other WaterSense products. For example, the installation of additional toilets in a household does not meaningfully change the total use of water unless the house's use or occupant's behavior also changes. For an RO system, after installation water use will increase compared to the baseline before installation without any change in the customer's behavior. As most WaterSense products save water use compared to a "standard" baseline, this specification should proceed cautiously as installation here actually increases use, sometimes considerably. Additional water use can be of concern for (1) those community water systems in water-stressed areas that face difficulty expanding their available water supply and (2) disadvantaged households for which the consequences of increased water use may significantly increase their water bill.

In situations where household RO treatment is truly warranted, it appears that the specification and the use of the WaterSense label could be of considerable value in reducing wasted water. However, for most individuals in most circumstances RO is not necessary. For this reason, we recommend that if EPA proceeds with a specification, that the materials supporting it and the label itself specify that water savings will occur only when compared to other RO systems, and that adding an RO system would result in increased water use whether labeled or not. This could be accomplished through a note on the label, in accompanying materials, and in associated WaterSense program materials along the lines of

"Water savings are only applicable to situations where reverse osmosis is necessary. Use of reverse osmosis where not necessary will lead to increased water use."

The proposed label includes performance information on removal of certain contaminants. Although this inclusion is one piece of helping consumers understand RO, the supporting materials should be sufficiently complete so that consumers can discern when RO is or is not necessary. It would also be helpful if the materials provided suggestions for how to obtain independent professional advice on the selection of in-home treatment appropriate to their situation.

At this time, AWWA is not making a recommendation on the overall merit of having a WaterSense specification and labeling option for point-of-use RO systems. However, should EPA proceed, it is essential that the measures described above be taken to prevent consumers making misinformed decisions, and consequently inadvertently increasing their water use.

Thank you for the opportunity to comment on this draft WaterSense specification. If you have any questions regarding this correspondence or if AWWA can be of assistance in some other way, please contact Adam Carpenter at (202) 326-6126 or acarpenter@awwa.org.

Best regards,

FOR THE AMERICAN WATER WORKS ASSOCIATION

A handwritten signature in black ink that reads "G. Tracy Mehan, III". The signature is written in a cursive, flowing style.

G. Tracy Mehan, III
Executive Director, Government Affairs

Who is AWWA?

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes more than 4,500 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our 50,000-plus total membership represents the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

Commenter: John Smith
Affiliation: Kinetico, Inc.
Comment Date: February 3, 2023

Email Text:

On behalf of Kinetico Incorporated, I would like to submit the attached comments regarding the WaterSense Draft Specification for Point of Use Reverse Osmosis Systems.

Regards,



kinetico.com  

John Smith

VP Product Development
Kinetico Incorporated
jsmith@kinetico.com
Direct (440) 564-4235
Mobile (704) 453-1910

Email Attachment:

See pages 44 through 45.

WaterSense® Draft Specification for Point-of-Use Reverse Osmosis (RO) Systems – Kinetico Response – February 3, 2023

Kinetico appreciates what the Environmental Protection Agency (EPA) is working to achieve by developing a WaterSense® program focused on reverse osmosis systems. We have reviewed the material released by the EPA in December 2022 titled *WaterSense® Draft Specification for Point-of-Use Reverse Osmosis Systems* and respectfully submit the following feedback:

Efficiency Rating:

While an efficiency reduction from the original Notice of Intent to the current Draft Specification of 30% efficiency does create a more achievable goal for manufacturers, the effects of an efficiency target of 30% still leaves questions about things like membrane life, contaminant reduction, and the magnitude of associated product cost increases. Unless we really understand the trade-offs that need to be made, we might be helping one problem, while at the same time creating a bigger one somewhere else. As an example, by making such a huge jump in efficiency over where we are today, we might be creating a system with significantly less contaminant reduction, exposing consumers to increased health-related contaminants and thus defeating one of the primary purposes of a reverse osmosis system. If the goal of the WaterSense® program is to achieve a water savings of 20% over typical non-WaterSense® labeled products in market, and the current efficiency rating is in the 15% range, it would seem a more sensible approach to start with a target that is 20% higher than the current 15% efficiency average. This should result in a target somewhere in the low 20% efficiency range. This would give manufacturers a chance to drive toward improved water usage and at the same time gaining a better understanding of the tradeoffs being made to achieve the EPA's WaterSense® goal.

Also, in the Draft Specification, the language jumps back and forth between efficiency and recovery. We understand the desire for EPA to adopt language consistent with what is in the standards. In addition, we recognize that the Drinking Water Treatment Units (DWTU) is working to address the use of the terms efficiency and recovery rating in the standard but we find the inconsistency confusing. If the EPA would adopt a definition for efficiency and that covered how all systems should be evaluated, it would avoid confusion which we feel the draft specification has regarding this subject. The NSF/ANSI 330 definition in Section 3.155.2 defines efficiency rating as "The percentage of influent water to reverse osmosis system that is available to the user as treated water under operating conditions that approximate typical use." WE believe this is how the WaterSense® program should talk about this topic.

Membrane Life Test:

On the topic of Membrane Life Testing, while the understanding of membrane performance over time and life is important, we do not feel there is enough industry knowledge and experience with the ASSE 1086 Standard, and the methodology prescribed therein to state whether this is an accurate reflection of how the membrane will work. Does data from testing shows how well the test replicates real world conditions? We would also like to understand the repeatability of the test both from

sample to sample and from lab to lab. Our recommendation would be to omit this requirement until a better understanding of the standard is achieved.

On behalf of Kinetico incorporated, thank you for your consideration.

Regards,

John Smith
VP Product Development
Kinetico Incorporated



Commenter: Bob Neff

Affiliation: Masco Research & Development

Comment Date: February 8, 2023

Email Text:

To whom it may concern,

On behalf of Masco Research & Development, I'd like to provide comments on the draft specification for Point-of-Use Reverse Osmosis Systems. See below for the comments:

1. The EPA's proposed mandatory labeling requirements and wording intended to communicate to an uneducated end user the practical waste/efficiency and certified capabilities of RO systems with standardized terminology is an important step for the RO market, especially as companies sometimes hide or obfuscate their inefficiency or lack of certified testing or performance.

However, since most RO systems are purchased online or through a trade professional they often won't see a box or manual before purchase *which would undermine the intent of this requirement* if that is how this requirement is implemented. **We propose that mandatory requirements on e-business sales pages (amazon listings for example) in addition to boxes and literature (manuals/spec sheets etc) would have a much greater impact.** Furthermore, to prevent the information from being buried by those who's efficiency or certified performance is lower than others the requirements could also include placement requirements (such as first page of the listing, including the chart in the picture deck, or ensuring it's not hidden under a sub menu).

2. In the Proposed chart below since RO Systems and their components can be tested and certified against NSF-53, or NSF-58 for the 5 contaminants, **we would propose the chart be modified to simply remove the "58" from bullet point #1 and bullet point #2 or change it to 53/58.**

Water Efficiency and Performance at a Glance		
Water Use		
This system is certified to achieve a XX% [efficiency rating/recovery rating] in the production of treated water. This means that it will send Y.Y gallons of water down the drain for every gallon of treated water it produces.		
Contaminant Removal		
Contaminant	NSF 58 Minimum Required Reduction	Actual Reduction
Arsenic ¹	96.7%	% Removal/Not Tested
Chromium ²	66.7%	% Removal/Not Tested
Lead	96.7%	% Removal/Not Tested
Nitrate/nitrite	66.7%	% Removal/Not Tested
PFOA/PFOS ³	95.3%	% Removal/Not Tested
<ul style="list-style-type: none"> All contaminant removal claims listed above are verified through NSF/ANSI 58 testing Contaminants listed as "Not tested" have not been verified for removal under NSF/ANSI 58 All contaminants reduced by this system are listed in the performance data sheet Not all contaminants listed may be present in the water 		
¹ Pentavalent, at a concentration of 300 parts per billion (ppb)		
² Hexavalent and trivalent		
³ Perfluorooctanoic acid/perfluorooctane sulfonate		

3. On the chart is the "actual reduction" to be the Maximum, minimum, or average reduction from the testing? We recommend this be clarified.
4. Arsenic NSF-53 and 58 both allow certification to 50ppb and 300 ppb and existing high quality RO systems are sometimes certified to either, how would an RO system that is certified for 50 ppb arsenic removal fill out this chart?
 - a. **We propose that systems certified to 50 ppb arsenic be allowed to use the 50ppm values for the chart** (both for the minimum required % and actual %, which is still sufficient for many arsenic applications) but with a statement indicating that the system is not certified for high arsenic concentrations (above 50 ppb) to make it clear that the system is not a good fit for certain high arsenic applications without implying to the end user that the systems is not certified for arsenic at all.

Thank you for your consideration of our comments along with the opportunity to provide comments. Should you have any questions, please let me know.

Thanks,

Bob Neff
Enterprise Product Compliance and Regulatory Manager
Masco Research & Development