



## Tertiary Recycle Treated Water (/initiative/4WrQ/tertiary-recycle-treated-water)

Not a drop to waste. Let's tertiary recycle our treated water and use it.

*Submitted by Russell Weisz*

### Comments

Manu Koenig 3w, 6d ago

SUGGESTION

There are a number of recycled water proposals, it might be helpful to combine efforts. One thing that seems new/ different about this proposal, which could be it's own thing, is part 2:

2 - Aggressively lobby the state to permit use of tertiary recycled watergenerally and for drinking.

It strikes me that City Council could write an official stance on this, send to the state, and work with other municipalities to support the position as well.

Christine Y Kirven 2w ago

CON

Recycled water may be good for flushing toilets while we are still flushing toilets but the research that already exists shows that pharmaceuticals survive the tertiary treatment process and that the state Title 22 program is boosting recycled without addressing scientific research showing problems with endocrine disruptors which can have effects counter intuitively, more intense from smaller amounts than large, among many other objections. The risk assessments done to date for the use of this, are based on testing of chemicals one by one, not the additive and synergistic effects of the multiple chemicals surviving the treatment process, etc... We all want water but this is not a panacea at all but taking our wastes and combining them, taking all out possible but still not all out....As long as we use so many chemicals, thousands produced yearly and most unregulated and likely to enter the waste stream, it is not safe to use this water for much of anything...but cleaning dirty things, the toilet. 70% of the population uses some pharmaceuticals, some of these survive treatment and can be taken up in food crops...The treatment process itself contributes to antibiotic resistant bacteria being produced that is contributing to us losing the use of these powerful drugs for our future. In China they have admitted to the problem of using recycled water in park landscapes...sad but true, it won't save us. Regulators are ignoring vast scientific research that undermines the use of recycled water, a shame.

Bill Smallman 6d, 19h ago

Most of what I read is that reverse osmosis will remove most pharmaceuticals from the water. Chemical analysis of water is not 100% certain, so they always place the word "trace" if they cannot detect it with their tests. I'm not sure how long it takes for these chemicals to break down, but would like to find out. They cannot be harmful, especially at trace amounts and the fact that people use them as medicine. You only drink less than 1% of the water from the tap, if at all, many people buy bottled water. We currently dump these chemicals out in the ocean, and a RO plant would provide the opportunity to capture them so they don't cause health problems in animals or people. For these reasons, in my opinion, are not sufficient to not recycle water to an advanced, RO, degree.

Deb Wirkman 3d, 18h ago

Bill, that is not an accurate description at all of what "trace constituents" are. Also, a RO treatment plant would still have a waste effluent stream.

Bill Smallman 3d, 16h ago

I disagree, "trace amount" simply means a very small quantity. So small it cannot be detected by modern chemical analysis techniques, and not enough to cause any health concerns. An RO plant which treats waste water has a waste effluent stream which simply goes back to the primary and secondary treatment plant, allowing bacteria to "treat" the water. There is no waste. This is far superior to a desal plant which dumps a pipeline of brine water polluting the bay.

Deb Wirkman 3d, 13h ago

Yes, "trace" means a small very quantity. Whether or not trace constituents can be detected or are harmful is not a part of the definition, that is something you are adding. Trace constituents are routinely detected in recycled wastewater by analytical labs, and whether they are harmful is the subject of debate. And as for waste effluent from RO I disagree with you, there is some waste that likely should not be reprocessed for reuse including some cleaning wastes, I would like the WSAC to sort that out.

Bill Smallman 2d, 21h ago

As far as I know, the RO filters are back-washed with clean water, and this just carries all the unwanted chemicals that bacteria will breakdown, so this water can go back as primary effluents to the waste water treatment plant.

Deb Wirkman 2d, 19h ago

Really, RO membrane fouling is resolved simply by backwashing with clean water? You might want to double check that, and the WSAC should examine treatment system fouling and cleaning requirements very closely for impacts to long-term performance and the environment.

Bill Smallman 2d, 18h ago

Clean water mixed with chlorine, hydrogen peroxide or peracetic acid is used with Desal. "Membrane Fouling" is much more of a problem with Desal or hard water which creates a hard solid blocking the

membrane pores, so these chemicals are added to backwash water to break them down and get carried off. Waste water comes from treated water which has gone through filters taking out hard chemicals like iron and manganese. So, yes, back washing with clean water and less use of these other innocuous chemicals to break down the hard scaling is necessary. What toxic chemical are you referring to that is needed to clean these membranes? There is no question that recycled water is much easier to treat than Desal, because of these reasons, and have a far positive effect on the environment, rather than a negative one by eliminating pollution into the Bay.

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Jude Todd 4d, 21h ago

CON

This is not a worthwhile proposal. It recommends drinking tertiary-treated wastewater without even mentioning a treatment process. The industry definition of tertiary-treated wastewater is simply wastewater that has been treated beyond secondary. That can mean any process -- possibly forward osmosis, or straining through sand beds, or ozonation, or flocculation, or any of a number of other methods. Based on the hundreds of studies I've reviewed, nothing short of a treatment train that includes reverse osmosis should be employed for potable

reuse, and even then there are unresolved health questions. There may be some safe, sensible ways to use recycled wastewater, but this is not one of them, and I don't believe it warrants WSAC consideration.

Bill Smallman 3d, 16h ago

I agree that to create drinking water it requires building an Advanced Recycle Treatment Plant using RO. A lot of these proposals are not detailed enough, but all of them bring up some good points. Realize if you drink water from the tap, you have already been drinking recycled water. The rural areas of the Santa Cruz mountains are loaded with private septic tanks. All of this water has plenty of time to migrate in the ground to potable production wells. It also seeps into all the water courses. Bacteria treats this water the same way it does at the wastewater treatment plant. It is legal by the CDPH to inject standard recycle mixed 50/50 with potable water into the ground as long as it is retained for over 6 months before it reaches a potable production well.

Bill Smallman 3w, 5d ago

PRO

I've been trying to get copies of water quality reports, (chemical analysis), from Orange County and San Jose/SCVWD for their Advanced Treated Recycle. SCVWD has just begun testing, and I am sure Orange County has had to submit this to CDPH. I also am trying to get the same thing from active Desal Plants. I think these reports would be invaluable to lobby CDPH to allow Direct Potable Reuse, which I totally agree with this idea to aggressively lobby CDPH right away. We could be the first in the USA to do this, and that would be really something.

Terry McKinney 2w, 6d ago

PRO

Great idea

Dorah L Shuey 2w, 6d ago

We need to look at the relevant research to see how safe retreated water is for short term reuse but definitely need to be treating our water to a tertiary level and putting it back in the water table. However, there needs to be a good bit of study to make sure that we are removing contaminants such as long-lasting medications, triclosan, nanoparticles with pollutants adhering to them, and other hard to remove additions to the water.

Fred Martinez 2w, 6d ago

Infrastructure is already built out in the city, but a good idea if you have 500 Billion to build.

Jan Karwin 2w ago

This proposal is worthy of further research and evaluation by the panel of experts.

Russell Weisz 2d, 21h ago

SUGGESTION

In his article ([http://www.mercurynews.com/opinion/ci\\_26387217/brian-schmidt-valley-should-lead-way-reusing-water](http://www.mercurynews.com/opinion/ci_26387217/brian-schmidt-valley-should-lead-way-reusing-water) ([http://www.mercurynews.com/opinion/ci\\_26387217/brian-schmidt-valley-should-lead-way-reusing-water](http://www.mercurynews.com/opinion/ci_26387217/brian-schmidt-valley-should-lead-way-reusing-water))), Brian A. Schmidt says that the treated recycled water he drank had been through reverse osmosis. So it would be fair to conclude that the tertiary process required to make water drinkable would include reverse osmosis. Additional filtering steps may also be required.

Deb Wirkman 2d, 17h ago

CON

In response to Bill Smallman: RO membrane fouling includes microbial and organic matter fouling, not just dissolved solids, which as you mention are generally a larger problem in desal. And clean water mixed with harsh chemicals is a cleaning solution, which is different from just "clean water." Some cleaning solutions are too strong to go directly into the treatment plant, they can cause problems with the biological treatments. Some contaminants can build up in the

treatment system and become too concentrated for the biological treatments or become a concern from a regulatory standpoint for end-use. Also, there are proprietary anti-fouling chemicals that can be added to the treatment process (which may be partially removed during treatment) or used for cleaning. In any case, there is likely to be a concentrated waste stream that cannot just be recycled through the advanced treatment plant. Moving to advanced treatment is unlikely to eliminate all potentially toxic waste effluent into the ocean, so the WSAC and other decision makers concerned about the marine environment should certainly explore this topic.

Bill Smallman 2d, 16h ago

NEUTRAL

I agree Deb that it needs to be thoroughly studied. I know that the backwash at the San Jose Advanced Recycle goes back to the plant + they would know if they have to add these cleaning agents. I've had difficulty getting any of this information, but I believe the need for cleaning agents is less because organic materials do not create a hardened precipitate and the water is not hard water, because iron and manganese have either been removed from the conventional treatment plants, or they have had time to precipitate being exposed to chlorine before the water makes it to the waste water treatment plant. Finally if this is really a big concern, again the recycled water is far more effective than Desal which clearly needs more backwashing and more cleaning agents because all the salt and way higher membrane fouling.