

# Toilet To Tap

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Did you know you may be drinking toilet water in a few years? The process of cleaning wastewater is a lot cleaner than you may think.

Photo Credit: Cole

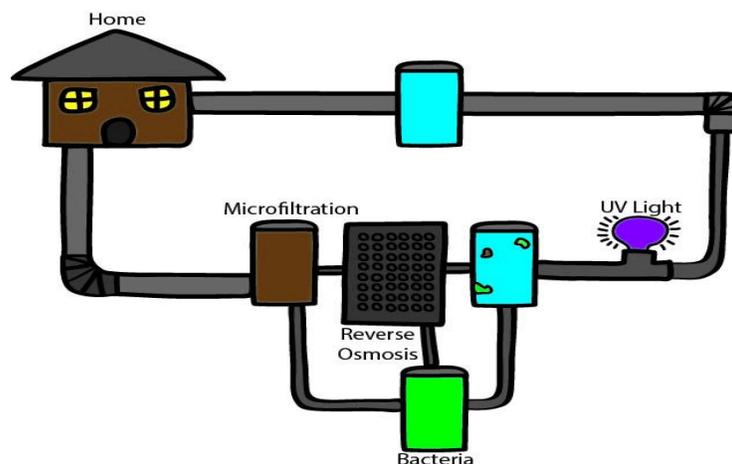


This is the water that could be at your faucet in a few years.

In a couple of years, when we flush the toilet, use the sink, or take a shower water it will go into the sewage, and travel to a place called a water purification plant where water goes to be treated for us to drink again. They simply recycle the water that we just used. It cleans the water and if there's any bacteria in the water the people at the plant do anything they can to kill those infections.

## The Process

The process of wastewater treatment begins in the home, moves to microfiltration and UV light treatment and is finally distributed to homes.



The process of advanced water purification happens in four stages. First the water comes from our houses to the treatment facilities. Now the wastewater goes into micro filtration. In this stage the water goes through tubes with small membranes that are the size of human hair. The membranes remove some of the viruses and bacteria in the water.

Now the water goes through Reverse Osmosis, which is the process where the water goes through a big wall with holes that are so small that only water molecules can pass through it. This releases the water from the solids moving with it.

At this point the water is entirely clean, but to insure that it is completely safe the water goes through ultra violet light that breaks down any organic substances. Then the water is put into tubes to come to our sinks, showers, and toilets.

### **Why Drink Tap Water?**



Photo Credit: Cole

This is the delicious tap water will be coming from our advanced wastewater treatment facilities in a few years.

Why should we drink we drink the water coming from our tap though? Why not drink convenient bottled water that “tastes better”? First of all bottled water creates a lot of unneeded trash around the earth. Six out of seven plastic bottles are downcycled, meaning this trash is shipped out of sight and thrown into dumps in other countries, where it just sits there and produces more toxins. There is no point of buying bottled water, when it costs typically more than a dollar! Tap water costs almost nothing. 25% of bottled water is tap water anyway. Tap water is also

safer for you, because it is tested one-hundred or more times a month for coliform bacteria, and studies have shown that water from advanced water purification plants is as clean as any normal drinking water.

## Downsides



This is the electricity, and CO<sub>2</sub> produced by advanced water purification plants

While this may sound all good, advanced wastewater treatment does have some flaws that come with the process of creating clean drinkable water though. Some of the concerns include the impact on the environment, especially the large amount of electricity it uses. Also when scientist are trying to improve the ways that advanced water purification plants work they can end up creating a more toxic effluent that can harm the ocean and its habitats.

Most of the methods used to clean the water impact the earth in one negative way or another. We had an expert, Doug Campbell, senior chemist for the City of San Diego Public Utilities department, answer some questions about the impact on the environment and problems it may face.

### What kind of problems can a wastewater treatment plant face?

“There are no problems with the process itself” Doug says. “The real problem is with regulations.” He says that it is difficult to create more advanced treatment plants because of regulations imposed by the government. He says that all of the tests to ensure that the process works and works efficiently were already done and they are able to focus on expanding the amounts of plants in other places with droughts.

## **What are the companies doing to work towards stopping some of these problems like power usage?**

Doug says that one of the most energy intensive things is reverse osmosis, that process that does most of the cleaning, uses a lot of electricity to do. Saltier water is harder for reverse osmosis to handle, therefore using more power. However wastewater has less salt and leftover waste can be converted to methane gas with anaerobic bacteria.

## **Have there ever been any problems with the wastewater treatment process that you know of?**

There have currently had little to no problems, he says. The process of cleaning is very thorough and nothing can survive the process other than the water, including bacteria and chemicals.

## **What do you have to say to people who are skeptical of the advanced wastewater treatment process?**

"It seems gross at first." "There is no such thing as new water." Doug says. "All of it is recycled." However, Doug says, it creates some of the cleanest water on earth. They are constantly checking for pharmaceuticals and other bacteria that may have made it through the system but so far they have found nothing.

It creates a self sustaining system that can recycle it's own water and most likely will never change price because it is not pulling from a current lake or outside place. He also says the process will eventually make that water cheaper than conventional sources.

We need to support advanced wastewater treatment facilities by opening our mind to the idea that wastewater can become clean drinkable

water after it has been treated, so be sure to support treatment plants all across the world.

## **Sources**

### **Reasons to choose tap water over bottled water**

<http://www.popsugar.com/fitness/Reasons-Choose-Tap-Water-Over-Bottle-d-3947535>

### **Reasons to never drink bottled water again**

<http://www.mindbodygreen.com/0-11193/7-reasons-to-never-drink-bottled-water-again.html>

### **Weighing environmental advantages and disadvantages of advanced wastewater treatment of micropollutants using environmental life cycle assessment**

<http://www.ncbi.nlm.nih.gov/pubmed/18192737>