

Q & A: WATER QUALITY, USE AND COST

Information from the Village of Paw Paw

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HOW COULD I HAVE USED THAT MUCH WATER?

The biggest complaint we hear from customers is that they think their water bill is too high. We explain how the meter works – that water only goes through the meter when something (a faucet, toilet, a water softener, etc.) in the house or business calls for more water. It is impossible for water to pass through a meter unless something in the house asks for water. This could be someone turning on a faucet to take a bath or flush a toilet. It could also be a water softener recycling, a leak in a faucet or toilet, or it could be a break in some water line after the meter.



We ask people to carefully check all faucets, toilets, and anything that has water pipes connected to it. Most often people come back or call back to say they found the culprit.



FACT: Not all leaking faucets or toilets, breaks or water softener recycling makes noise. You may want to put a drop of food coloring in their toilet tank at night before they go to bed. If there is no color in their tank in the morning (or a lighter color) and they did not flush the toilet over night, then the toilet leaks a little and money is going down the drain. We also advise people to look at their meter and write down the numbers on the meter. Then don't use any water for at least 6 hours and then look at the numbers again. If they are different, there is a leak somewhere.

HOW COSTLY ARE WATER LEAKS?

People are also amazed that even a small leak can be so costly. They forget, leaks can run 24 hours a day, seven days a week. Toilets, however, can 'stick' only occasionally, which requires you check them more frequently. Repair leaks promptly.

It is literally 'money down the drain.' **And, you pay twice!** That's what happens when you don't fix a leak right away – it is money down the drain, twice. You pay for the water and you pay for the sewer charge. Sewer is billed on the amount of water that goes in, so it is expensive and you can help yourself by fixing leaks quickly.

- A leak as small as 1/32" (one thirty-second of an inch or the size of a thin pencil lead) wastes 170 gallons every 24 hours.
- A leak 1/16 of inch in diameter wastes 600 gallons every 24 hours

- A leak 1/8' in diameter waste 2,500 gallons every 24 hours.

WHY DO I HAVE WATER THAT SMELLS LIKE SULFUR OR ROTTEN EGGS?

A sewer, or "rotten egg" odor, from your tap water could be the result of several problems in your own home, and may not be directly related to the water supply. If you detect the odor in your kitchen faucet, it could be the result of a partially clogged drain or a dirty garbage disposal. The easiest way to verify this is to check another faucet in the house. If the water from the other faucet smells fine, then, more than likely, the bad odor is a result of a dirty garbage disposal or remains in your sink's trap.

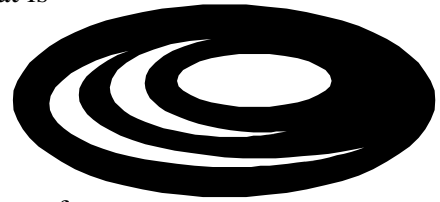


Another common cause for a "rotten egg" odor from house tap water can be associated with your hot water heater.

A hot water heater can produce a rotten egg odor when it is turned on. To determine if the odor is from the hot water heater, go to a sink closest to the water heater and fill a glass with water from the hot water faucet and a second glass from the cold water faucet and smell them. If the offending odor is detected only from the glass of water taken from the hot water faucet, the problem is most likely originating from the water heater. Newer water heaters are a real problem (see below). This also works to increase the smells. Flushing the water heater yourself, or contacting a plumber to perform the flushing, and then resetting the water heater to the correct temperature will, in most cases, solve the problem.

What Do Iron Particles in the Water or the Hardness of Water Have to Do with the Sulfur/Rotten Egg Smell?

The sulfur smell comes from the breakdown of iron particles that is commonly found in water that comes from wells. Iron in water is often the cause for "hard" water. The more iron particles in your water the harder your water. Municipal water systems add phosphate to coat the iron particles and reduce the "hardness" of their water supply. Homeowners often install a water softener system to do the same thing. However, the amount of phosphate the municipality can add is regulated by the State because of the health concerns over high levels of phosphate in the human body. Thus, the municipal water system can only add what has been determined to be a safe amount of phosphate. That amount may not be enough to coat all of the iron particles found in the municipal water.



Why is this important? Because, as the tiny iron particles break down it produces sulfate – the sulfur, rotten egg smell. Sulfate-reducing bacteria help break down the particles.

How Does My Water Heater Cause Smells?

It is relatively common to have this rotten egg odor in hot water only. That is because the water heater's "sacrificial" anode rod is to blame. This rod, made of magnesium, helps protect the tank



lining from corrosion; instead, the rod itself corrodes. Unfortunately, as it does, the magnesium gives off electrons that nourish sulfate reducing bacteria – the bacteria that eats up the iron particles and in the process releases the sulfur smell. Removing this rod may eliminate the problem. Some have found aluminum rods can be installed with success.

Temperature is Important

Once you get the sulfate-reducing bacteria in your water heater you will want to get them out. Even if you drain your water heater, change the anode you'll still have the bacteria. But, there is an easy way to kill them off. To eliminate sulfate-reducing bacteria from the water heater, you need to raise the water temperature above 140 degrees for 8 hours. Bacteria die out at temperatures above 140 degrees. To safely follow this procedure, first make sure your water heater has a functioning temperature and pressure relief valve. Also, to prevent accidental scalding, warn users that water will come out of faucets extremely hot and should not be used at the increased temperature.

Drain Your Water Heater

In water systems with “hard” water, it is best to drain your water heater twice a year. This drains out the tiny iron particles that settle to the bottom of your water heater. Draining them out of your water heater does two good things. First, it removes the tiny particles of iron that have settled to the bottom that may discolor your water and that provide sulfate-reducing bacteria their food supply. Secondly, you are heating water more efficiently as you are no longer first heating the sludge that settled to the bottom of the water heater before you heat the water. To drain your water heater...

- 1) Turn off the water supply to the water heater.
- 2) If it is a gas water heater, turn off the gas to the heater. If it is an electric heater, turn off the breaker or unscrew the fuse that works the water heater.
- 3) Open the spigot on the bottom of the water heater and drain the heater completely. To do this you may want to connect a hose to the spigot and run it to your sump pump, floor drain or into a bucket. You'll want a bucket that you can dump out during this process.
- 4) Drain the water heater.
- 5) Once it has drained, turn the water supply back on and let it wash the particles (trash) out of your water heater. Let it run this way for about 15 minutes or until no more particles (trash) is being washed out the spigot.
- 6) If it doesn't drain, that is a real problem. You probably need a new water heater. Call a plumber.

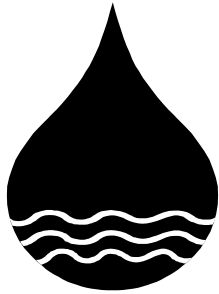
I HAVE WATER THAT SMELLS OF CHLORINE: WHY?

There are two reasons for chlorine smells in water lines. One, it is common in seldom used lines. Thus, you may notice more smells with water lines that you don't use very often. Second, it is from the chlorine we add to the water supply.

First, Chlorine and sulfur collect in little used lines and dead-end lines. When these lines are used, you may smell chlorine or sulfur. If this is the case, briefly turn these lines on more frequently.



Secondly, this may be caused by the injection of chlorine in the water main at each well. (We have five wells in and out of the City limits.) Chlorine helps purify the water. When we turn a well on, chlorine is injected into the water. Customers a short distance from the well may smell the burst of the chlorine. Customers further away may not notice this smell as the injection disperses better over distance.



MY WATER IS BROWN?
I HAVE RUSTY WATER?
I HAVE SEDIMENT IN MY WATER: WHY?

While brown and rusty looking water is safe, it just isn't appealing, tasty or good for washing clothes. Sometimes, this is a problem caused by the water system (run by the City). Sometimes it may mean a problem in your home system (from the shut-off valve to faucets).

It may mean that we have been working on a water line, flushing hydrants, or that the fire department fought a fire and opened a hydrant. All of these actions can rapidly change the pressure in the line or the direction of the water in the line. This loosens particles of iron that collect on the walls of the water lines. They break loose and flow into the line going into your home. When a waterline breaks and we work to fix the line we bang on the waterline. This loosens the particles of iron that then flow into your home.

Older pipes in your home will build up with particles too. Banging or working on your pipes will also cause discolored water. Changing temperatures cause pipes to expand or shrink. This process loosens up the particles and you'll get brown / rusty water. If an indoor water line runs by a window or an exterior wall the pipe and the water in it may get really cold, almost freeze, or actually freeze. This causes the water in the pipe to expand. This puts pressure on the pipe. This expansion loosens the particles that have collected on the walls of the pipe. Then, when you turn on the water, you'll get a brown or rusty colored water.

Your water comes from five wells. We turn them on and off at different times. They all push water from the well to the water storage tank. Three of these wells are at least 1 mile from the storage tank. When we turn them on, it changes the direction of the water moving through the line. It also changes the pressure of the water in the line. This action, as you read above, loosens particles that naturally collect on the walls of the pipes. They become suspended in the water and cause the water to appear rusty or brown.

How do we know if it is your pipes or ours? One way is draw some water from your faucet and collect it in a clear glass or clear glass jar. Then, City personnel can disconnect the water supply

at the shut off valve or the meter and let the water from the main line run into another clear jar or glass. If the water matches, the problem would be in the main line. If the water is different with the water from the main line clear, then the problem is in your lateral service or the lines in your home.

WHAT DOES PAW PAW WATER COST AND HOW DOES THIS COMPARE?

We know money doesn't grow on trees in our yard or in your yard. We monitor our rates closely. We compare our rates with other ground-water supplied municipal systems. We are not the highest and we are not the lowest. Our rates are in the middle of the pack. Residents pay two fees. One is what we call the "Ready-to-Serve" fee (RTS). This RTS fee covers all our expenses for the ground wells that pump water out of the ground, the storage tank (water tower) that keeps the pressure in the water lines so when you turn on a faucet water comes out, and the delivery of the water to your home (water mains, hydrants, valves, etc). As of July 2008, costs residents \$13.65 per month. The second cost is what we call the "Consumption" fee. This consumption fee covers the cost for treating the water once it comes out of the ground, reading meters, billing and such. In July 2008 this is just \$1.49 for 1,000 gallons of water.



The American Water Association estimates that the typical family of four (two parents and two children) uses 180 gallons a day or 5,400 gallons a month. In this case, this typical person would pay the \$13.65 for the RTS fee and \$8.05 for the amount of water; a total of \$21.70 for the month.

HOW DOES THIS COMPARE TO BOTTLED WATER?

Our water is really cheap compared to bottled water you buy at a store. Let's assume you can buy a 16.9 ounce bottle of water in Paw Paw for \$0.99. Since a gallon is 128 ounces, you would need to buy 7.57 bottles to equal a gallon of water. This would cost you \$7.49. Two gallons of bottled water - roughly 15 bottles - would cost you \$14.98.

For \$15.14 you get 1,000 gallons from the Village. This is the monthly RTS fee (\$13.65) and the Consumption fee (\$1.49) added together.

- Bottled water is 500 times more expensive than Village water!
- To buy 1,000 gallons in bottled water, you would need to purchase 7,570 bottles. This is 315.41 cases of bottled water. This would cost you a grand total of \$7,494.30.
- *Read the information on this same Website titled "Water Myths and Facts" to learn more about comparing bottled water to municipal water.*

