



CAROLINE COUNTY PUBLIC UTILITIES

Why does my water smell like rotten eggs?

United States Geological Survey (USGS) – “You would know it if you had this problem! A frequent cause of musty, earthy odors in water is naturally occurring organic compounds derived from the decay of plant material in lakes and reservoirs. In some parts of the country, drinking water can contain the chemical hydrogen sulfide gas, which smells just like rotten eggs. This can occur when water comes into contact with organic matter or minerals, such as pyrite. The situation mainly occurs as groundwater filters through organic material or rocks.

Water containing hydrogen sulfide can have an objectionable odor (and the water may taste bad), but generally, the water is not harmful to your health. However, odors can be caused by other constituents as well, so you may want to call your local Health Department and mention the odor to them. The best way to find out what is in your water is to have the water tested by a state-certified laboratory. A list of these labs is available from the U.S. Environmental Protection Agency State Certification Program. Your local county Extension office may also offer water testing.”

NOTE: Caroline County drinking water is tested regularly and meets or exceeds the Drinking Water Standards set by the Environmental Protection Agency (EPA) and The Virginia Department of Health (VDH). A copy of the Consumer Confidence Report for your water system is available at <https://co.caroline.va.us/273/Public-Utilities>

Quick Facts

- **Hydrogen sulfide gas (H₂S)** can give water a “rotten egg” taste or odor. This gas can occur in wells anywhere.
- It is naturally occurring - a result of decay and chemical reactions with soil and rocks.
- It is produced by certain “sulfur bacteria” in the groundwater, well, or plumbing system.
- It is produced by sulfur bacteria or chemical reactions inside water heaters.
- It can come from pollution (this is rare).
- If you only experience the smell when using your hot tap, it may be a chemical reaction occurring inside your water heater and not a problem with your water supply.
- There are over **316 chemicals found in drinking water** across the US. So for many people, it can be a common problem to have strange odors coming from their tap water, especially if the supply comes from a well or still source.

DO YOU notice a particularly offensive smell when you start to run your tap water? Could the water be described as smelling like rotten eggs or sulfur? If this has happened to you, don't worry, we're here to help. Surprisingly, this is a very common problem in many households and isn't as devastating as you might think. Contrary to what you might be thinking now, this may not cost a lot of money in plumbing repairs as you might be able to fix the problem yourself. Let's take a deeper look at why your water smells like rotten eggs.

The Cause Of The Rotten Egg Smell

The reason your water probably smells like rotten eggs is that it contains some traces of hydrogen sulfide. Even extremely small amounts of hydrogen sulfide can cause your water to have quite the odorous smell! In most cases, this smell occurs due to a build-up of hydrogen sulfide in your water heater. This problem is intensified if you have low usage or haven't used your water heater in quite some time.

Is it Harmful?

Despite the objectional smell your nose might experience, hydrogen sulfide is relatively harmless if present in your water and is a non-health risk. If anything, all it does is provide an extreme nuisance when found in your water supply. That being said, how do we get rid of the offensive smell?

Determining the Source

Before we start to solve anything, first, we need to figure out what exactly is causing the rotten egg smell. To do this, try running both the hot and cold water in all the faucets in your house.

- If the smell is coming from just your hot water, then the problem most likely exists from the water heater in your house. If so, this may be a chemical reaction occurring inside your water heater and would not be a problem with your water supply.
- If the smell is coming from both water temperatures, it could be an issue with your plumbing or water source.
- Take note to see if the smell is coming from all of your faucets or just a few particular areas or rooms of your house. If the odor is coming from isolated areas, the problem most likely exists in these drains or pipes and not your entire water supply.
- If you have a water softener and your cold water also smells like rotten eggs, the problem is likely to be sulfur bacteria in the water softener. Changing the water softener solution will solve this issue.
- If you have a water filtration system and your cold water also smells like rotten eggs, the problem is likely to be sulfur bacteria in the water filter. Changing the water filter will solve this issue

How is Hydrogen Sulfide Gas Produced in a Water Heater?

A water heater can provide an ideal environment for the conversion of sulfate to hydrogen sulfide gas. The water heater can produce hydrogen sulfide gas in two ways - creating a warm environment where sulfur bacteria can live and sustaining a reaction between sulfate in the water and the water heater anode. A water heater usually contains a metal rod called an "anode," which is installed to reduce corrosion of the water heater tank. The anode is generally made of magnesium or aluminum (by itself) metal. This rod often provides a chemical catalyst and aids in converting the naturally occurring sulfides in the water and produce hydrogen sulfide. The anode is 1/2 to 3/4 inches in diameter and 30 to 40 inches long.

How To Eliminate That Rotten Egg Smell From Your Water

Actions You Can Take

Clear Your Pipes By Flushing

Turn on all the faucets in your house and allow them to run for about 10 minutes. After this amount of time, turn them off. This process should clear out your pipes, and hopefully, the smell will cease.

Clear Your Water Heater



If you figure out the smell only comes from your hot water, then it might be wise to flush your water heater.

- Without turning off your water supply, find a hose to connect to the drain valve of your water heater. Place the other end of the hose outside in a good place where excess water can run
- After 10 minutes of draining, take a sample of the water. Fill up a cup and determine whether or not there are particles or tiny pieces of sediment in the cup.
- Allow the heater to drain until there are no particles present

Disinfect Your Water Heater (see caution below)

You can also try disinfecting your water heater, which is a very simple process. Simply turn the temperature of your water heater to 160 degrees and leave it run for a couple of hours. This should kill all bacteria in your water heater.

CAUTION: Increasing the water heater temperature can be dangerous. Consult with the manufacturer or dealer regarding an operable pressure relief valve and for other recommendations. Be sure to lower the thermostat setting and make certain the water temperature is reduced following treatment to prevent injury from scalding hot water and avoid high energy costs.

Actions Your Plumber Can Take

Unless you are very familiar with water heater operation and maintenance, have a plumber or water system professional do the work.

Replace the magnesium or aluminum anode.

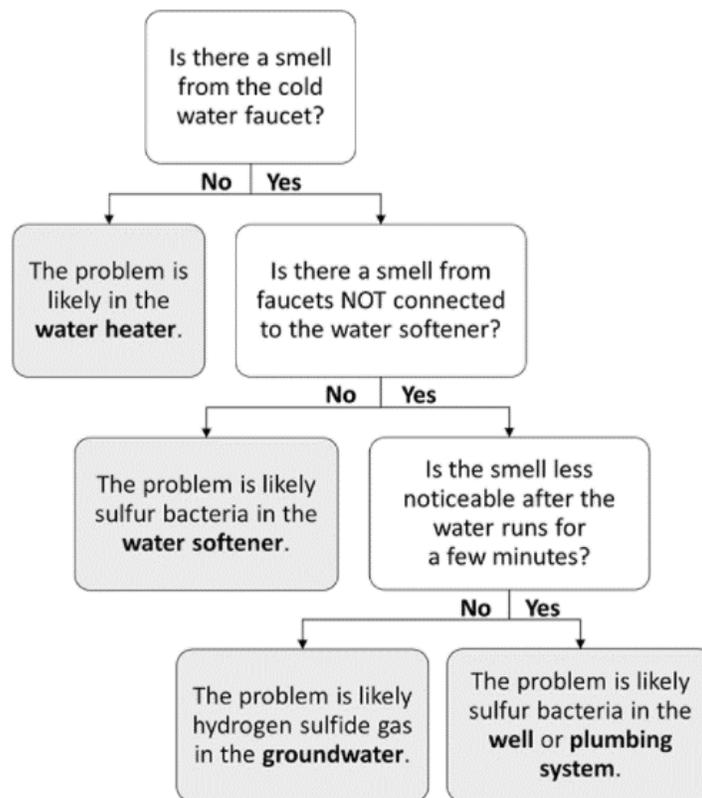
Many water heaters have a magnesium or aluminum (by its self) anode, which is attached to a plug located on top of the water heater. It can be removed by turning off the water, releasing the

pressure from the water heater, and unscrewing the plug. You may wish to consult with a water heater dealer to determine if a replacement anode made of a different material, such as **zink or aluminum-zinc alloy**, can be installed. A replacement anode may provide corrosion protection without contributing to the production of hydrogen sulfide gas.

Shock chlorination and flush the water heater.

Shock chlorination involves pouring a chlorine solution directly into the water heater to kill bacteria. This technique is commonly used as a first step in treating bacterial contamination problems in water heaters. Since hydrogen sulfide originates from bacterial reduction of sulfur, shock chlorination will help reduce or eliminate the offensive bacteria. However, if all bacteria are not destroyed by chlorination, the problem may return within a few weeks.

QUICK-STEP GUIDE



Caroline County is committed to providing high-quality water to our customers. If you are experiencing any issues or need assistance in identifying water quality issues, please do not hesitate to contact our office for assistance at (804) 633-4390. Please note Public Utility employees will not be able to work/repair your private water and sewer systems and can only offer recommendations to assist you.