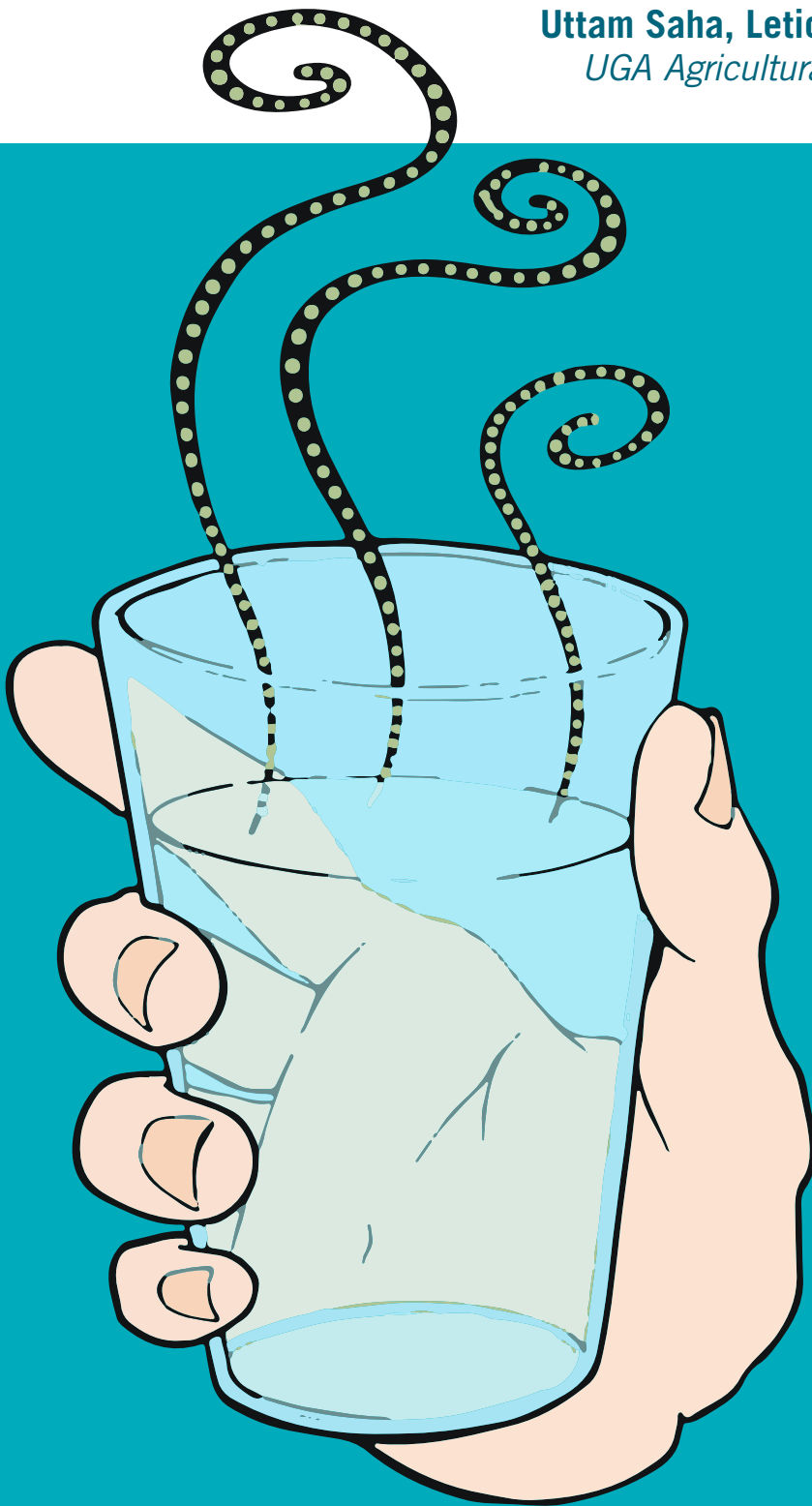


YOUR HOUSEHOLD WATER QUALITY: **Odors in Your Water**

Uttam Saha, Leticia Sonon, Jake Mowrer and David Kissel
UGA Agricultural and Environmental Services Laboratories



UNIVERSITY OF GEORGIA
EXTENSION

Homeowners sometimes experience unpleasant odors in their household water. In many cases, the exact cause of the odor is difficult to determine by water testing; however, this publication provides a few general recommendations for treating some common causes of household water odors.

Locating the Source of the Odor

If odor occurs in all water faucets, the problem is probably in the main water supply. If it occurs only in certain faucets, the problem is likely in the fixtures or pipes supplying those specific faucets. If the problem goes away after running the water for a few minutes, the problem is somewhere in the household plumbing system. If the odor is persistent, the problem could be the water source or a combination of both the water source and the plumbing system. **Figure 1** outlines the possible sources of odors in water.

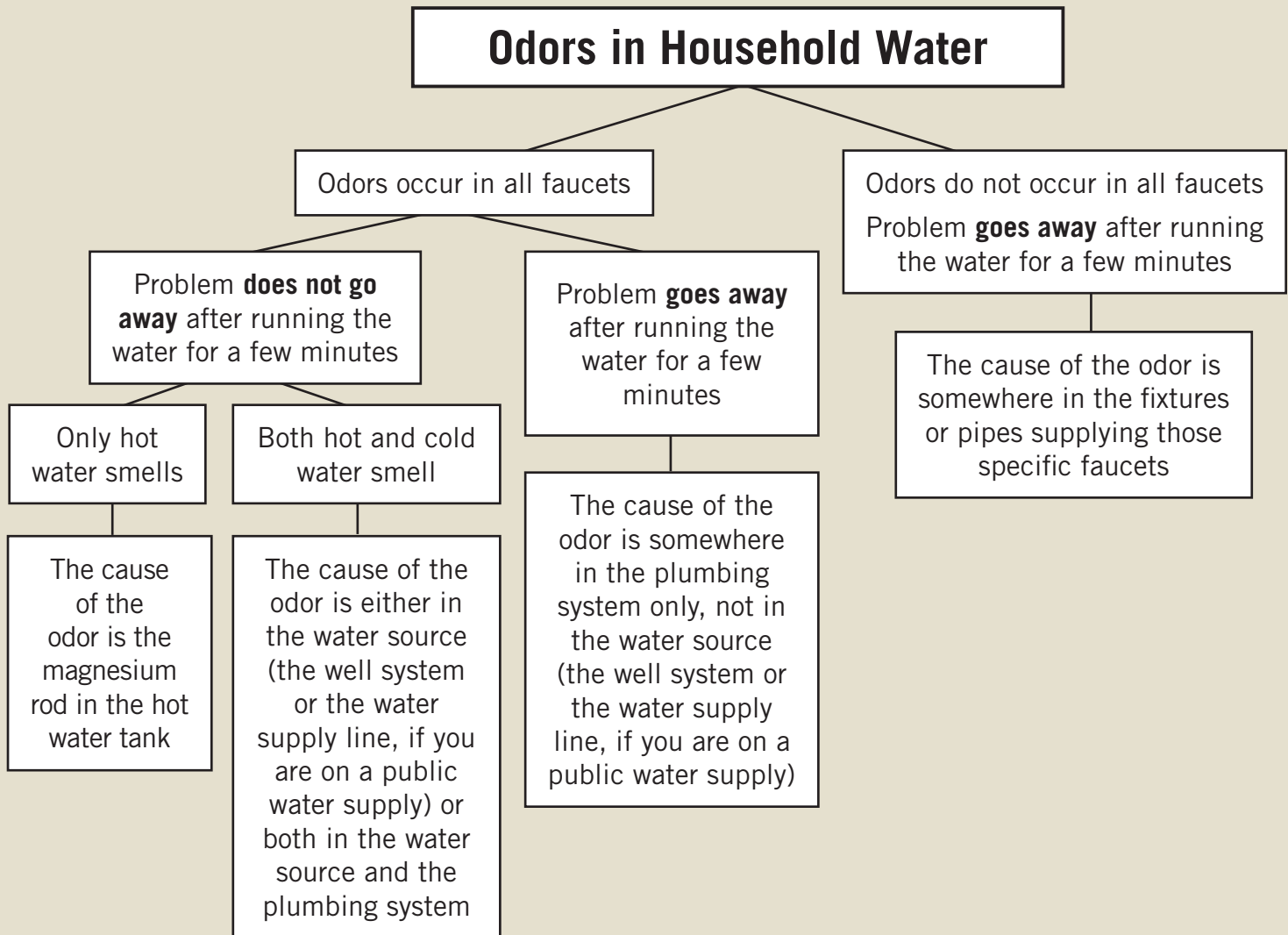
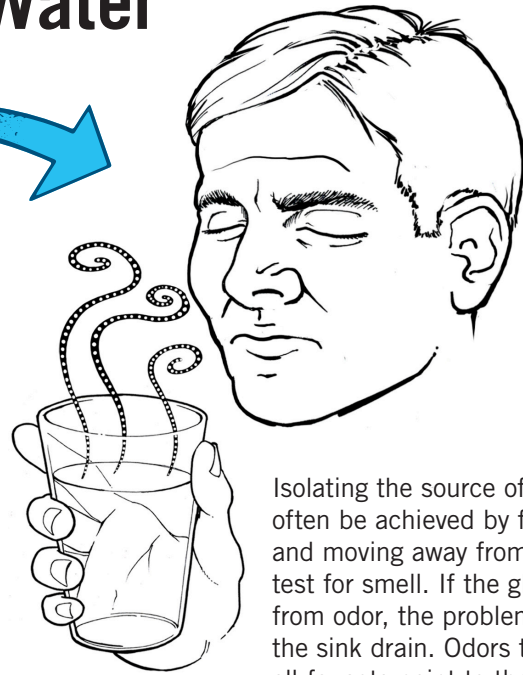
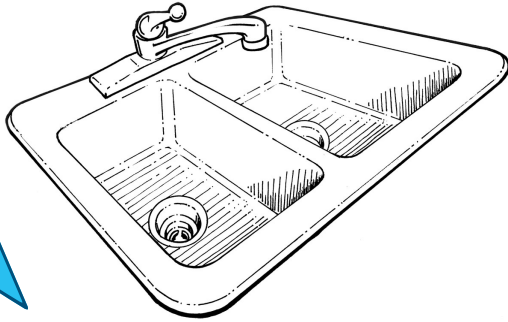


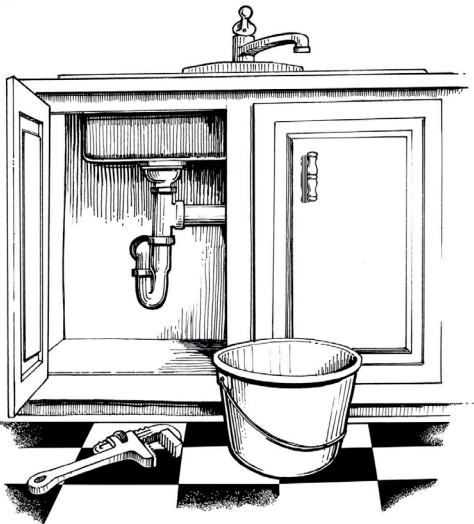
Figure 1. A decision tree to help locate household water odor sources.

Odors in Your Household Water

Sink drains are a common source of odors from bacterial growth. Disinfection and flushing is a simple fix.

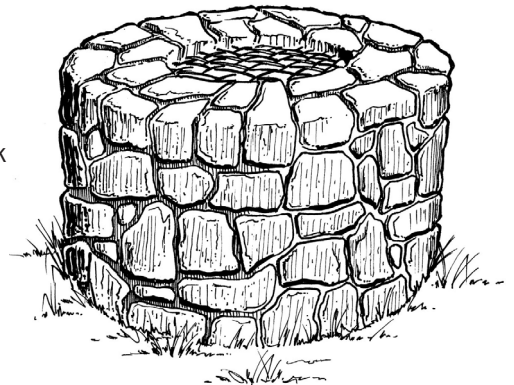


Isolating the source of odors can often be achieved by filling a glass and moving away from the sink to test for smell. If the glass is free from odor, the problem may be in the sink drain. Odors that occur in all faucets point to the water supply as the source of the problem.



Odors may originate in plumbing systems or in hot water heaters. Organic matter trapped in plumbing can release sulfurous or sewage-like odors and can interact with chlorine added to public water supplies. Hot water heaters may produce odors if left unused for some time or if the thermostat is set too low. Flushing these systems is recommended.

Odors originating from wells may be caused by contamination from surface runoff, improperly located septic systems or leaky underground storage tanks. These types of smells include bleach and gasoline-like odors. Fishy, earthy, musty or sulfurous odors from wells may indicate the presence of harmful bacteria. Shock chlorination is recommended when bacterial contamination is suspected.



For odors coming from the plumbing system or the well system, corrective measures are suggested. If you obtain water from a public water supply (PWS) and the odor is suspected to originate from the water source line, contact your water provider. This is especially true if your neighbors also experience the same type of odor problem.

Drinking Water

Common odor problems, probable causes and suggested corrective measures

If a particular odor problem in your household water and its cause are not included in this list, discuss the problem with a drinking water professional from your water provider (if you are on a public water supply), county health department or UGA Cooperative Extension agent (1-800-ASK-UGA-1).

Bleach, Chemical or Medicinal Odor

Public water suppliers generally chlorinate water to prevent bacterial growth. Typical levels of free chlorine in drinking water from PWS are 0.2 - 2.0 parts per million (ppm), though levels can be as high as 5.0 ppm. Odors resulting from a chlorine addition usually go away if the water is exposed to air for several minutes.

Adding chlorine to the water through shock chlorination of a well or plumbing system produces a strong bleach (chlorine) odor. The bleach smell stops when chlorine completely dissipates. This requires turning on outside faucets and letting the water run until the smell is gone.

In some cases, the added chlorine may interact with organic materials built up in the plumbing system and add odor to the water. The odor should disappear after running the water for a few minutes. Use **Figure 1** to locate the source of the odor. If water is supplied by your own well and the problem appears to be in your plumbing and/or well systems, then your entire water system should be flushed, preferably by a licensed well driller or pump installer. If you are on a PWS and the problem appears to be the water supply line, contact your water supply authority.

Rotten Eggs (Sulfurous), Decayed or Sewage-like Odor

Generally, a rotten egg (or sulfurous), decayed or sewage-like odor in household water is a result of bacterial activity, which can be due to:

- **Bacteria growing in the drain**

This is the most common cause of these types of odors. Over time, organic matter such as hair, soap and food waste can accumulate on the walls of the drain. These deposits serve as a food for bacteria to grow. The bacteria can produce a gas that smells like rotten eggs or sewage. Address this problem by following these two steps:

1. First, ensure that both the cold and hot water have the smell and that the smell is coming out of one or several faucets, but not all. Fill a glass with water from the sink that has the smell, then step away from the sink and swirl the water around inside the glass few times. If the problem is in the drain, the tap water in the glass should not have an odor.
2. If the water in the glass does not smell, you should disinfect and flush the drain.

- **Bacteria growing in the water heater:** Bacteria growing in the water heater can also produce a rotten egg or sewage smell. Frequently, this occurs if the hot water is unused, if the water heater is turned off for a significant period of time or if the thermostat on the heater is set too low. *Generally, the bacteria that produce this problem are not a health threat;* however, the taste and odor can be very unpleasant. To address this problem, the following actions are suggested:

1. Make sure that hot water smells, but cold water does not. Often, the smell originates from a magnesium heating rod in the hot water tank.
2. If the heater has a magnesium rod, a licensed plumber can replace it with an acceptable alternative such as an aluminum rod.

- **Bacteria growing in the well:** If problems with the drain or water heater are ruled out, the odor may be coming from the water source. *Do not use the water because it may contain harmful bacteria.* To address this problem, the following actions are suggested:
 1. If you are on your own well, the natural groundwater chemistry may be supporting bacterial growth in the well. Shock chlorinate the well and pump out water until the chlorine odor disappears. For a step-by-step shock chlorination procedure, refer to the University of Georgia publication “[Disinfecting Your Well Water: Shock Chlorination](#),” which is available at your county Extension office and online at caes.uga.edu/publications.
 2. A defective or improperly located septic system may be present near your well. Contact your county health department.
 3. If you are on a PWS, contact your water supply authority or county health department immediately.

For more information about rotten egg odor, refer to the University of Georgia publication “[Your Household Water Quality: Hydrogen Sulfide and Sulfate](#),” which is available at your county Extension office and online at: caes.uga.edu/publications.

Musty, Moldy, Earthy, Grassy or Fishy Odor

Although these odors are harmless, the human senses of taste and smell are extremely sensitive even at a very low level. These kinds of odors may be due to:

- **Decaying organic matter in the drain**
- **Pollution of well water from surface drainage**

The presence of bacteria is very common in both cases. By far, the most common cause of this type of problem is the decaying organic matter deposited over time in the drain. To make sure the problem is not in the well, fill a glass with tap water, then step away from the sink and swirl the water around inside the glass few times. If the problem is in the drain, the tap water in the glass should not have an odor. Disinfecting, cleaning and flushing the drain should eliminate the odor.

The reservoir/pressure tank may also be the source of such an odor. Cleaning and maintaining the reservoir/pressure tank periodically can prevent bacteria from growing to levels that cause odor in the water.

Less commonly, certain types of algae, fungi and bacteria growing in the water supply, especially during warm weather, can affect the water odor.

If the problem is in the well, shock chlorinate the well and pump out plenty of water until the smell of chlorine disappears. If the problem persists, consider installing either:

1. An activated carbon filter
2. An automatic chlorinator followed by an activated carbon filter.

If you are on a PWS and insufficient chlorine is being used to disinfect the water, certain types of bacteria may grow in the supply line and cause these kinds of odors. Contact your water supply authority or county health department.

Petroleum, Gasoline, Turpentine, Fuel-like or Solvent-like Odor

Even though these odor problems are rare, they are potentially serious. These odors may be due to:

- **A leaking fuel tank or underground fuel storage tank near your well**
- **Discharge from factories or landfills contaminating the water supply**
- **Run-off from agriculture contaminating the water supply**

Stop drinking the water because it may cause several adverse health consequences, including but not limited to:

1. Anemia
2. Increased risk of cancer
3. Liver and kidney problems

Remedial actions include:

1. Report the problem to your county health department
2. Eliminate the source of the problem
3. Install an activated carbon filtration system after determining the type and source of the chemical contaminant

If you are on a PWS, contact your water supply authority and county health department immediately.

Other Odors

Odor	Probable Cause	Possible Health Effects	Suggested Remedies
Detergent odor or foaming water	<ul style="list-style-type: none"> • Septic tank leakage into water supply. 	<ul style="list-style-type: none"> • Gastrointestinal illnesses (diarrhea, vomiting, cramps). 	<ul style="list-style-type: none"> • Eliminate source and shock chlorinate well
Methane gas odor	<ul style="list-style-type: none"> • Naturally decaying organic substances found in shallow wells near swamps. • Houses built above/near old landfills or aquifers overlying oil fields. 	<ul style="list-style-type: none"> • Gas is explosive and toxic to breathe. 	<ul style="list-style-type: none"> • A well vent can remove methane from some wells. Contact a certified well contractor in your area to see if a well vent can be installed on your well. • Aeration can also be used to remove methane. • Install a residential deaeration system and re-pump.
Sharp chemical odor	<ul style="list-style-type: none"> • Leaching of pesticides or other contaminants into groundwater. 	<ul style="list-style-type: none"> • Anemia or other blood disorders. • Nervous system or reproductive disorders. • Increased risk of cancer or stomach, liver and kidney problems, etc. 	<ul style="list-style-type: none"> • Activated carbon filter <i>or</i> • Reverse osmosis.

References:

- Color, Taste, and Odor Problems in Drinking Water. Fact Sheet. Washington Department of Health, January, 2011. <https://www.doh.wa.gov/portals/1/Documents/pubs/331-286.pdf>
- Color, Taste, and Odor: What you should know. Massachusetts Department of Environmental Protection. <https://www.mass.gov/doc/color-taste-and-odor-what-you-should-know-0>
- Liukkonen, B. 2011. Why Well Water Smells Bad. University of Minnesota Extension. <https://extension.umn.edu/natural-resources>
- Saha, U., L. Sonon, M. Risse and D. Kissel. 2011. Water Quality and Common Treatments for Private Drinking Water Systems. Bulletin 939 (Revised July 2011). University of Georgia Cooperative Extension. <http://www.caes.uga.edu/publications>.
- World Health Organization. 2008. Guidelines for Drinking-water Quality. Chapter 10. Acceptability Aspects: Taste, Odor and Appearance. WHO Press, World Health Organization, Geneva, Switzerland.

Reviewers:

Mark Risse and William Carlan, University of Georgia

Kristine Uhlman, Texas A&M University

Beth Thomas, AdEdge Water Technologies, Inc.

extension.uga.edu

Circular 1016

Reviewed September 2021

Published by the University of Georgia in cooperation with Fort Valley State University, the U.S. Department of Agriculture, and counties of the state. For more information, contact your local UGA Cooperative Extension office. *The University of Georgia College of Agricultural and Environmental Sciences (working cooperatively with Fort Valley State University, the U.S. Department of Agriculture, and the counties of Georgia) offers its educational programs, assistance, and materials to all people without regard to race, color, religion, sex, national origin, disability, gender identity, sexual orientation or protected veteran status and is an Equal Opportunity, Affirmative Action organization.*