

# Guide to Common Water Quality Concerns

The City of Corpus Christi Water Department's Water Quality Team understands the importance of safe drinking water for the health and well-being of our customers and strives to achieve aesthetically pleasing water. Aesthetics, which include color, taste, and odor, are influenced by our water's quality. Our source waters' natural state, weather related events, drops in pressure within the distribution system, and internal plumbing issues all can affect the aesthetics of the water delivered to your home. These constituents usually do not present any health risks but can result in an unpleasant look, taste, or odor in your water. In some situations, internal plumbing issues may pose a health risk and it is important to address those issues promptly. The following guide addresses common water quality concerns with suggested causes and solutions in regards to the aforementioned events.

Which of the following best describes your water quality concerns?



**There are colored particles in your water.**

*Which of the following best describes the particles in your water?*

## **Black Particles:**

- If the particles are **hard and similar to large coffee grounds** - They are probably granular activated carbon (GAC) from the inside of a GAC water filter. To stop this problem, replace the filter cartridge or consult with the manufacturer of the unit or the salesperson who sold it to you.
- If the particles are **solid yet rubbery in texture** - They could be pieces of an old disintegrating faucet washer or gasket. If this is the problem, the particles would likely only be present at one faucet and that faucet might leak. To fix this problem, replace the faucet washers and the packing at the ends of the supply lines.
- If the particles are **very small in size and oily or sooty in texture** - They are probably from the inside of a flexible hose. These hoses are made of black rubber but they are covered with a braided stainless steel mesh. Over time, the chlorine or chloramine in the water causes the rubber to break down. These hoses are located under the sink connecting the water supply to the faucet, or at the water heater connecting it to the water supply. To stop this problem replace the hose with one of the new styles that have a water disinfection resistant lining (clearly advertised on the label) or change to a different style of hose that is not made of black rubber.
- If the particles are **small, irregular in size and shape, very hard, and may include particles of different colors** as well - They consist of mostly iron and are not a health hazard but they can be a nuisance if they clog your washing machine screens, shower heads, and/or the screens at the ends of your faucets (called aerators). If the water is clear with these particles in it, they probably came from the inside of your pipes. If the particles come from the Corpus Christi Water Department water mains, the water will usually be discolored for a few hours as well.

## **Orange or Brown Particles**

- If the brown or orange particles are **very hard and irregular in size and shape** - Usually small pieces of rusted steel that have broken off the inside of your water pipes or the Corpus Christi Water Department water mains. These particles are very hard, irregular in size and shape, and can be several different colors (including black). They consist of mostly iron and are not a health hazard but

they can be a nuisance if they clog your washing machine screens, shower heads, and/or the screens at the ends of your faucets (called aerators). If the water is clear with these particles in it, they probably came from the inside of your pipes. If the particles come from the Corpus Christi Water Department water mains, the water will usually be discolored for a few hours as well.

- If the brown or orange particles are **small, round beads that are uniform in size, shape, and color and the size of fish eggs** - A common cause is a broken water softener. Inside a water softener are many small, round beads. The mechanism that keeps these beads in the tank can break, releasing them into your water. These beads vary in size and color depending on the manufacturer; however, some commonly used beads are about the size of fish eggs and are brown or orange in color. If you see that these particles are uniform in size, shape, and color and you have a water softener, call your service agent for repairs.

## White or Tan Particles

- If the white or tan particles are **flake-like, very thin, and irregular in shape** - Can be a combination of calcium carbonate and magnesium carbonate; this material is often referred to as pipe scale. Calcium and magnesium carbonates are naturally occurring minerals and are found in varying concentrations in most waters around the world. These minerals are not a health threat; in fact, they are beneficial to human health. Over time, these minerals can deposit on the inside of your pipes and then begin to flake off. Although this process usually occurs slowly over a long period of time, there are three common circumstances that can cause it to happen rapidly. If your water was turned off for repair work (either by you or the Corpus Christi Water Department), the pressure and turbulence created when it is turned back on can dislodge the minerals from the pipes. If the water supplied by the City becomes softer or if you add a water softener to your plumbing system, the softer water can begin to dissolve the minerals from the pipes again and pieces may begin to break loose. If you have galvanized steel pipes, they will corrode over time, begin to swell, and cause the minerals to flake off. There is no practical way to remove pipe scale from the inside of your pipes; if the problem is severe, you may want to consider re-plumbing.
- If the white or tan particles are **round and sand-like** - Particles formed from minerals can accumulate from the water heater. As the water is heated, the minerals begin to precipitate out of the water forming white or tan sand-like deposits. As you use the hot water, these minerals can be carried along clogging the inlet screens in washing machines, shower heads, and faucet aerators. To keep mineral deposits from accumulating in the water heater, flush it at least once a year. Flushing the water heater regularly also extends the life of the heater and makes it operate more fuel efficiently.
- If the particles **float, are flaky and irregular in shape, very small, can break apart easily, and can have a faint bluish-green tint** - The water heater can put floating white particles into the water. Some water heaters contain a plastic dip tube which is an extension to the inlet of the water supply located on the inside of the heater. It allows the cold incoming water to enter the tank at the bottom. As the tube gets old, it can begin to disintegrate and show up as white particles in the hot water. These particles vary in size and will break apart fairly easily. They can have a faint bluish-green tint to them, but they are mostly white. To correct this problem, contact the manufacturer for advice; they might replace the tube for free.
- The particles are **small, round beads that are uniform in size, shape and color** - Can also be water softener resin beads. Inside a water softener are many small, round beads. The mechanism that keeps the beads in the tank can break, releasing them into your water. These beads vary in size and color depending on the manufacturer; however, two commonly used beads are very small and are white or tan in color. If you see that the particles are uniform in size, shape, and color and you have a water softener; call your service agent for repairs.



## Your water is discolored.

*Which of the following best describes the discoloration in your water?*

### **Brown, Red, Orange, or Yellow**

Brown, red, orange, or yellow water are all caused by rust in the water. There are two major sources that can cause water to be rusty: the Corpus Christi Water Department water mains or the water pipes in your house, apartment, or business.

There is a fine brown sediment that accumulates at the bottom of some of the Corpus Christi Water Department's water mains over the years and may contain small amounts of silt and organic material from our reservoirs. However, most of it is rust from the water main walls. If an unusual flow of water through the main occurs, this sediment can become disturbed and temporarily suspended in the water causing a brown, red, orange, or yellow color. Unusual water flows are commonly caused by main breaks or firefighting events. This type of disturbance usually lasts for approximately two to four hours after which time the sediment will settle back out and the water will clear. This discolored water is not a health threat. However, it is often very unpleasant, so it is best to wait several hours for the water to clear before using it. Do not wash any laundry during this time, as the rust can stain clothing; and do not use any hot water, or you will draw this rusty water into your hot water tank. If you were doing laundry when the water became discolored, rewash it later when the water clears. Use a rust stain remover, or regular detergent. **DO NOT USE CHLORINE BLEACH.** Chlorine reacts with the iron and can form a permanent stain.

The other major cause of brown, red, orange, or yellow water is rusty water pipes in your house, apartment, or business. If your water is being discolored by old, rusty pipes, the only permanent solution is to replace them. Replacing only some of the pipes can improve the problem, or it can actually make it worse. If some of the old steel pipes are replaced with new copper pipes and the two different metals are connected directly together, the copper can cause the steel to rust even more than before the replacement. This process can be stopped with the use of a proper dielectric coupling between the two dissimilar pipes. Consult an experienced plumber. Water that is being discolored by rusty pipes is not a health hazard; however, it is an indication that the pipes are corroding and they can eventually begin leaking.

The first step in solving a brown or yellow water problem is to distinguish if the problem is located on your property or if it is in the Corpus Christi Water Department's supply. The following are some common characteristics of a Corpus Christi Water Department water main disturbance:

- The water was clear earlier but all-of-a-sudden became discolored.
- Only the cold water is discolored.
- The water is discolored at all of the water faucets on the property and does not clear or improve after the water has been run for several minutes.

Some common characteristics of a corrosion problem on your property include:

- The water is discolored every morning or when first used after several hours of disuse.
- The water clears after it has run for a few minutes.
- The discoloration is only at one or several faucets, but not all of them.
- The discoloration is only in the hot water.

If you are still not sure if the discolored water is due to your pipes or our water mains, check the water supply. Turn off the faucet, immediately take a clean glass or a white bowl and go to the water faucet (hose bib) at the front of your house, apartment, or business. Turn the water on wide-open and run it for a full two minutes. After two minutes, fill the glass or bowl with water. If the water is clear at this front faucet, the problem is likely being caused by your plumbing and a plumber should be called. If the water at the front tap is discolored after running for two minutes, the problem is likely coming from our water main. If the water does not clear within 24 hours, contact our Water Quality Hotline at (361) 826-CITY (2483).

## **Milky White**

Milky white water, also commonly described as cloudy, hazy, soapy, or foamy, is almost always caused by air in the water. One of the many properties of water is its ability to dissolve gases- including air. Sometimes the air comes back out of the water in the form of many tiny bubbles; this gives the water a milky white appearance. To see if the white color in the water is due to air, fill a clear glass with water and set it on the counter. Observe the glass of water for 2 or 3 minutes. If the white color is due to air, the water will begin to clear at the bottom of the glass first and then gradually will clear all the way to the top. This is a natural phenomenon and is completely normal; the water is safe to use.

## **Green**

Green water is usually is due to extreme copper plumbing corrosion. If this is happening, the water will usually have a bluish-green tint and/or will leave a bluish-green stain on porcelain if the water drips from a faucet. This copper corrosion can be caused by your electrical system being grounded to your water pipes, especially if you have a mixture of pipe material. If the green color is only in the hot water, it may be due to the temperature on the water heater being set too high. If you have a hot water circulating system, the return line may be too small or the water may be pumped too fast for your pipe size, or it may be installed incorrectly. Green water can also be caused by dezincification of cheap bronze alloys found in valves, water pumps, and water pump parts. This problem can occur in high-rise buildings and large industrial properties where the water is pumped to storage tanks.

If you are not sure if the green water is due to some plumbing defect on your property, check the water supply. You can do this by taking a large white bowl or bucket and going to the water faucet (hose bib) at the front of your house, apartment, or business. This faucet is usually near the main water shut-off valve for the property (commonly called the wheel valve). Turn the water on wide-open and run it for a full two minutes. After two minutes, fill the bucket or bowl with water. If the water is clear at this front faucet, the problem is likely being caused by your plumbing and you should consult a plumber. Some copper corrosion problems can be very complex and may require consulting a corrosion expert.

## **Blue**

Having blue water is rare. It can be caused by a leaking water valve in a toilet where you are using a blue colored toilet tank/bowl cleaning system (such as drop-in pellets or a hanging bottle in the tank). This usually happens when the toilet is upstairs and the water supply has been shut off for some reason.

Another cause of blue water is due to extreme copper plumbing corrosion. If this is the circumstance, click the "Back" link below, then click on "Your water is green in color," as it will give more information on copper corrosion.



## Your water has a particular taste or odor.

*Which of the following best describes the taste or odor in your water?*

### **A Rotten Egg, Decayed, or Sewage-like**

There are two common causes of a sulfurous, decayed, or sewage-like taste or odor in the water: bacteria growing in your drain or bacteria growing in your water heater. By far, the most common cause of this type of problem is the drain. As bacteria accumulate, they produce gases that smell. It is natural to assume the bad odor is coming from the water because you only smell it when you turn the water on. However there is nothing wrong with the water, you just need to disinfect the drain.

Another cause of a rotten egg or sewage smell in the water is bacteria growing in the water heater. This is most likely to occur if the hot water has been unused for a significant period of time, if the water heater has been turned off for a while, or if the thermostat on the heater is set too low. The bacteria that produce this problem are not a health threat; however, the taste and odor can be very unpleasant. This problem can be solved by heat disinfection of the water heater.

### **Musty, Moldy, or Earthy**

The most common cause of this type of problem is bacteria growing in the drain. As the bacteria grow and multiply, they produce gases which can smell musty or moldy. It is natural to assume the bad odor is coming from the water because you only smell it when you turn the water on. However there is nothing wrong with the water, you just need to disinfect the drain.

### **Bleach-like, Chemical, or Medicinal**

There are two common causes for a chlorinous, bleachy, chemical, or medicinal taste or odor in the water; the addition of chlorine to the water by the Corpus Christi Water Department, or the interaction of that chlorine with a build-up of organic material in your plumbing system. The first step to identifying and solving the problem is to determine if the problem exists in the City's water supply or in your plumbing. If the problem occurs in only one or several - but not all - of the water faucets inside your home or business, and the problem goes away after running your water for several minutes, the cause is somewhere in your plumbing system. If this is the case, you can eliminate the problem by disinfecting your drains with bleach to kill any odor-causing bacteria. You can also remove the aerator on your faucets and disinfect those as well.

If the problem is in the water supply, it will occur at every water faucet on the property and it will not disappear after a few minutes of running the water. If the problem is at every faucet on the property and does not disappear after running the water for a few minutes, then the only way to determine the cause is by checking the water supply to the property.

To check the water supply, take a clean glass and go to the water faucet (hose bib) at the front of your house, apartment, or business. This faucet is usually near the main water shut-off valve for the property (commonly called the wheel valve). Turn the water on wide-open and run it for a full two minutes. After two minutes, disconnect the water hose if there is one attached, and sample the water; never drink water that has traveled through a garden hose. If you still taste or smell the chemical in your water, it is most likely coming from the City's water supply. Call 361-826-CITY to report the problem.

## Salty

A salty taste in the water is usually caused by naturally occurring sodium, magnesium, or potassium. The salty taste will often be very mild and diluted if present. Because Nueces River has a high dissolved solids count, these salt compounds are often found in Corpus Christi Water Department's source water and cannot be filtered out during the treatment process. It is not harmful to your health to drink this water. In fact, many dissolved solids are beneficial to your health.

Another possible cause of salty water is a water softener. This taste will be much more salty than the natural salt compounds dissolved in the source water. When the internal seals of the valve leak in your water softener, salty water can enter the cold water lines during the regeneration cycle of your water softener. This often occurs between 2 a.m. and 4 a.m. once or twice a week. The extremely salty taste will still be present in the morning when you brush your teeth or make coffee. The salty water can be removed by running the water for 1 minute. If the salty water does not clear within 5 minutes, a more serious problem may be present. Contact your water softener manufacturer for details.



## There are particles or residue on your dishes.

Particles or residue on your dishes is most likely caused by minerals in your water. This can range from small colored specks to a hazy, milky, or cloudy color on your dishes. Our source water, Nueces River, contains a higher than average amount of dissolved minerals. These minerals are not a health hazard and can actually be beneficial to your health. Since 2010, it has been more common to see residue left on dishes after being washed in the dishwasher. However, this is not due to an increase in the amount of dissolved minerals in the water. Many detergent companies have removed phosphates from their detergents in order to improve the environmental quality of lakes, bays, rivers, and other bodies of water. Phosphates previously used in detergents removed any residue caused by grease or minerals, and also prevented any residue from reattaching to the dishes. Now that phosphates are no longer used, many customers experience the nuisance of cloudy glasses and particles on their dishes.

There are several options to remove the residue. First, check the dishwasher to make sure it is on the hardness setting. Most newer dishwashers have a hardness setting that needs to be set depending on regional water quality. Our total hardness amounts to an average of 200 mg/L or 12 grains per gallon. Secondly, clean your dishwasher by adding 2 cups of vinegar and a dishwasher cleaning product, then start the cleaning cycle with no dishes in the dishwasher. Most detergent companies sell dishwasher cleaning products. You can also use vinegar in addition to a detergent to wash your dishes. Another way to prevent residue is to add phosphates back into your detergent. You can buy trisodium phosphate from most hardware stores and add it into your detergent. Lastly, you can refer to a consumer search report conducted to determine the quality of several brands of dishwasher detergents. This information can be found at the following website: <http://www.consumersearch.com/dishwasher-detergent>.