

# Appendix E

## Common Drinking Water Quality Questions from Customers

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## WQ Tap

### **What constitutes tap water?**

**Chlorine** – Depending on where you live and the time of year, free chlorine, or combined chlorine (chlorine in the form of chloramine – which is chlorine combined with ammonia) is added to disinfect the water and make sure that the water contains no harmful bacteria. The chlorine level varies from about 4.5 ppm to 0.2 ppm depending on where you live (near the treatment facility or far away), the form of chlorine (combined or free chlorine) and the time of the year (chlorine is harder to keep in the water during the summer when the temperature of the water is warmest).

**Hardness** – Hardness is primarily a result of the calcium and magnesium carbonates in the raw water sources (Potomac River and Goose Creek for our Central Water System), which are natural minerals. The water you receive is moderately hard to hard as our source waters contain calcium carbonate. The hardness ranges from 80-90 ppm for the water supplied by the City of Fairfax and 84 – 170 ppm for the water supplied from Fairfax Water. Customers served by Community Systems should consult their latest annual water quality report for their water quality data.

**pH** - The acidity of our water is controlled at the treatment facilities to make sure that treatment works properly and that the water coming out of your tap is consistent and low in corrosiveness. The natural water's pH can change. The treatment facilities control these changes so that water supplied to our customers is neutral in pH and is not acidic. Customers served by Community Systems should consult their latest annual water quality report for their water quality data.

**Fluoride** – Fluoride is added to the water, in accordance with Virginia Department of Health (VDH) guidance, at 1 milligram-per-liter level for the prevention of tooth decay for our central system customers and for the Selma and Village Green at Elysian Heights Community Systems.

**Corrosion Inhibitor**- In our Central Water System, a corrosion inhibitor is used to control the corrosiveness of our water to prevent lead and copper from leaching out of the plumbing materials into the water. One water supplier, the City of Fairfax uses sodium hexametaphosphate for corrosion control. Our main water supplier, Fairfax Water, uses an orthophosphate for corrosion control.

## WQ Regulations

### **Who controls my water's quality?**

The US Environmental Protection Agency (EPA) sets national standards on drinking water to protect public health. These standards are enforced in our state by the Virginia Department of Health (VDH). On a monthly or annual basis, we submit water quality test results to VDH, assuring them we are providing water that meets all safe drinking water standards. In addition, if there were ever a serious water quality problem, we would notify VDH immediately, as well as our customers, and work collaboratively with VDH to take prudent and corrective action.

Additional monitoring is performed in order to continue to deliver excellent water quality to your homes, families and businesses. We continue to set and evaluate our own water quality goals that are more stringent than federal or state standards. We keep refining these goals as new information is available and as better technology and science are developed, so that we can continue to provide excellent drinking water at the least cost to you.

## **WQ Safe**

### ***Is my tap water safe and how will I know if my water isn't safe to drink?***

*Loudoun Water monitors your drinking water quality frequently and must comply with stringent federal and state drinking water quality requirements. You may also review our annual water quality report mailed to customers each year just prior to July 1. If you do not have a copy, or you have questions about the report, call customer service at 571-291-7880 or visit [www.loudounwater.org](http://www.loudounwater.org).*

*Taste, appearance and odor are not reliable means for determining whether your water is safe. We will notify you by local newspaper, WTOP radio, and/or TV, if possible, if your water doesn't meet EPA or state standards. We will also attempt to notify you by roadside signage and/or hand-delivered flyers if there is an emergency. Our customer service department will likely extend hours of operation to take your calls during an emergency and that is the best first place to call. Next, listen to WTOP radio (103.5 FM) and look for roadside signs in your neighborhood. Do not rely solely on TV news or the website during an emergency. We cannot guarantee coverage or accuracy by TV news stations and during emergencies where power may be affected, the web may not be updated in a timely fashion.*

## **WQ Sick**

### ***I think I got sick from my tap water***

*We often hear about people getting sick from water when they travel to foreign countries. Water in foreign countries is often not cleaned or disinfected as effectively as it is in the U.S.*

*Loudoun Water tests the water daily, and in some cases constantly, to make sure that it is free of harmful microorganisms. People typically do not become sick from drinking tap water. There are so many other more likely sources of germs, and given the stringent standards and extensive water quality monitoring performed, the concern over tap water is minimal in Loudoun County.*

## **WQ Corrosive**

### ***How corrosive is my tap water?***

*Water mains in Loudoun County are made of ductile iron pipe. Most of the plumbing is comprised of copper. Some have lead in it. These metals (lead, copper, iron) can dissolve from the pipes and get into the water. This process whereby water dissolves metal pipes is called corrosion. A corrosive water is a water with characteristics that make corrosion a problem.*

*Loudoun Water takes corrosion seriously for two reasons. First, pipes that lose metal become weak and don't last as long as they should. Second, metals that become dissolved in water, called corrosion products, can be a nuisance (the water can taste metallic) or pose a health concern (as with lead).*

*Although our waters are not particularly corrosive in their natural states, the quality of the water for the Central Water System is adjusted at the water treatment facilities to significantly reduce corrosion.*

*There are two ways that the water quality is optimized to reduce corrosion. First, we make sure the pH of the water is slightly alkaline rather than acidic. The pH is a measure of the acidity of the water, and our system pH ranges from 7.0 – 8.5, where 7.0 is neutral, and above 7.0 is alkaline. The other way our main water supplier, Fairfax water, optimizes water quality to reduce corrosion is by adding an adequate level of orthophosphates to the water at the treatment facility. The orthophosphates, in combination with the natural calcium and magnesium minerals in the water, coat the pipes internally to prevent the iron and lead and copper from dissolving. Orthophosphates are simply made up of phosphorus (an essential element for all living things) and oxygen. They are common in the environment, especially as nutrients for plants, and are very useful to us for reducing the corrosion of our distribution pipes and your internal house plumbing.*

## **WQ Fish**

### **Tap water and fish**

*Fish have gills to breathe in water. The gills provide for direct transfer of chemicals, such as oxygen, between the water and their bloodstream. Chlorine in water can quickly affect fish because there is no other barrier to filter out the chlorine. Chlorine and chloramines are toxic to fish. This also includes turtles, reptiles and amphibians. Humans, on the other hand, take water into their stomach where the chlorine is neutralized and does not come in direct contact with the bloodstream.*

*Whether you have an aquarium, a fish bowl or a fish pond, when you fill with tap water, the chlorine must be removed before you put the fish in it. This process is called dechlorination. There are two ways to do this: you can add a treatment chemical to remove the chloramines or you can filter the water through carbon. Dechlorinators vary in their effectiveness. Reverse osmosis does not remove chloramines.*

*If you let water sit in a container for over a month, most of the chloramine and ammonia will dissipate. Boiling water will not help.*

*When a dechlorinating agent is used, the chloramines break down and release ammonia which is also toxic to fish. The ammonia must then be removed, too. Biological filters (where nitrifying bacteria grow), natural zeolites (clays) and adjustments in the pH are ways to control the ammonia. If a well-established ecosystem exists, then the biological organisms or nitrifiers in that system might be able to remove the ammonia themselves.*

*You also need a home test kit to sample and test the water to make sure the chlorine and ammonia have been removed.*

*Contact your pet store manager for home water test kits and other supplies such as dechlorinators and filters. Read the instructions carefully to make sure that you use the materials properly.*

## **WQ All People**

### ***Is the water safe for my baby, cancer patients, severely compromised immune system, and for all populations?***

*Tap water, though treated to a high degree to meet applicable State and Federal standards, may still reasonably contain trace contaminants. Some people may be more vulnerable to these contaminants than the general population. People with severely compromised immune systems, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk for infections. If you or a loved one in your home falls into this category, ask your health care provider about drinking tap water.*

## **WQ Boil**

### **Should I boil my tap water?**

*In general you do not need to boil your tap water. Your tap water is safe and does not need to be boiled in order to drink it. Boiling water increases the risk of scalding or burns. This risk is typically much more significant than any benefits you might receive from boiling the water.*

*If there was a need to boil water to rid it of microbial contaminants, such as Giardia, Cryptosporidium and harmful bacteria, then the rule of thumb is to bring the water to a rolling boil for one minute. For example, people who go camping in the mountains are advised to boil their spring water before drinking or cooking with it.*

*Does boiling improve the taste of tap water? It is unlikely that you will notice any taste difference. The primary reason for the taste of tap water is the chloramine (chlorine) that is in the water. This gives the water a slight chlorine taste. The chloramine is there to maintain the disinfecting ability of the water throughout the water distribution system. Chloramine is used because it is persistent. Boiling water for 5 minutes might only reduce the chloramine level by half. It will not get rid of the chloramine. Placing the water in the refrigerator in a container will help to reduce the chlorine taste since colder water has a less noticeable taste.*

## **WQ Hot**

### **Can I use hot tap water for cooking, drinking baby formula?**

*While all the water that comes into your home comes through one service line and one meter, and is safe and treated drinking water, once it passes your meter it can go to different places in the household plumbing system. Safe drinking water continues, after your meter, to your kitchen cold water faucet, bathroom cold water faucet, bathtub, toilet, dishwasher, and so on. However, a portion of that water goes to your hot water heater. As the water sits in the hot water tank it will change. The protective chlorine residual can die off allowing bacteria to grow. Odors can develop. The larger the hot water tank and the less hot water is used, the more likely the change in water quality will occur. In addition, hot water can leach lead and copper from plumbing materials at elevated levels. We advise customers to use cold water for drinking and food preparation.*

## **WQ Hose**

### **Is it safe to drink water from a garden hose?**

*Substances used in vinyl garden hoses to keep them flexible can get into the water as it passes through the hose. These substances are not good for you or your pets. We recommend you do not drink from a garden hose.*

## **WQ Dialysis**

### **Can tap water be used in home kidney dialysis machines?**

*Tap water must go through further treatment in order to be used in a dialysis machine. Because the water comes into close contact with a patient's blood, several substances like aluminum, fluoride and chloramines must be removed from the water before it can be used. In general, it is the responsibility of the Medical Director of the dialysis unit to ensure and monitor the quality of the water used in dialysate (which is essentially purified water to which electrolytes have been added). Since water is the primary part of dialysate, it is regulated as a drug under the Food and Drug Administration (FDA). The FDA considers a water treatment system for dialysis a Class II medical device and companies who manufacture and service them must follow the FDA's Quality System Regulations. The company that maintains and services a water treatment system typically specializes in this field and is retained by the dialysis unit for maintenance and troubleshooting.*

## **WQ Storage**

### ***How long can drinking water be stored safely?***

*The disinfectant in drinking water will eventually dissipate even in a closed container. If that container contained bacteria prior to filling up with tap water, the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water could be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth. In general, when the chlorine residual is no longer present in your drinking water, it should not be consumed. The rate of which the chlorine residual will dissipate in a container is dependent on the exposure to bacteria and temperature.*

## **WQ Levels**

### ***How can I understand the levels of things in my water?***

*The annual water quality reports mailed directly to you each June contain the constituents and levels detected in your drinking water, most of which have been detected in very low concentrations..*

*Chlorine and fluoride are measured at parts per million or milligram per liter levels – they are interchangeable terms.*

*One part per million is similar to one minute in two years.*

*Other substances, such as trihalomethanes, are measured at parts per billion or micrograms per liter levels.*

*One part per billion is similar to finding the only quarter this is flipped heads up in a line of quarters which extends across the United States from L.A. to Atlantic City 5 times.*



## **WQ Hardness** ***How hard is my water?***

*Hard water requires more soap and synthetic detergents for home laundry and washing, and contributes to scaling in boilers and industrial equipment. Hardness is caused by compounds of calcium and magnesium, and by a variety of other metals. Water is an excellent solvent and readily dissolves minerals it comes in contact with. As water moves through soil and rock, it dissolves very small amounts of minerals and holds them in solution. Calcium and magnesium dissolved in water are the two most common minerals that make water hard.*

*Our Central Water System is considered moderately hard to hard because our source waters have calcium carbonate in them. The hardness ranges from 80-90 parts per million (ppm) for the water supplied by the City of Fairfax and 84 – 170 ppm for the water supplied from Fairfax Water. The hardness of water is referred to by three types of measurements: grains per gallon, milligrams per liter (mg/L), or parts per million (ppm). The water produced by Fairfax Water is considered moderately hard to hard. The table below is provided as a reference.*

<b>Water Hardness Scale</b>		
<i>Grains Per Gallon</i>	<i>Milligrams Per Liter (mg/L) or Parts Per Million (ppm)</i>	<i>Classification</i>
<i>less than 1.0</i>	<i>less than 17.1</i>	<i>Soft</i>
<i>1.0 - 3.5</i>	<i>17.1 - 60</i>	<i>Slightly Hard</i>
<i>3.5 - 7.0</i>	<i>60 - 120</i>	<i>Moderately Hard</i>
<i>7.0 - 10.5</i>	<i>120 - 180</i>	<i>Hard</i>
<i>over 10.5</i>	<i>over 180</i>	<i>Very Hard</i>

*Often, when you purchase a new dishwasher or washing machine, the manufacturer has recommended settings that depend on the hardness of the water. The table below provides the range of hardness of water delivered to your home.*

<b>Loudoun Water's Hardness Scale</b>		
<i>Grains Per Gallon</i>	<i>Milligrams Per Liter (mg/L) or Parts Per Million (ppm)</i>	<i>Classification</i>
<i>4.9- 9.9</i>	<i>80-170</i>	<i>Moderately Hard to Hard</i>

*The EPA establishes standards for drinking water that fall into two categories – Primary Standards and Secondary Standards. Primary Standards are based on health considerations and Secondary Standards are based on aesthetics such as taste, odor, color, or corrosivity. There is no Primary or Secondary standard for water hardness. In fact, the National Research Council (National Academy of Sciences) states that hard drinking water generally contributes a small amount toward total calcium and magnesium human dietary needs. They further state that in some instances, where dissolved calcium and magnesium are very high, water could be a major contributor of calcium and magnesium to the diet. (National Research Council, Drinking Water and Health, Volume 3, National Academy Press, Washington, D.C., 1980)*

## WQ Fluoride

### **How much fluoride is in my water?**

*The VDH guides us in adding fluoride to tap water to prevent tooth decay. Fluoride is an essential element for bone material. The natural waters in this area have minimal levels of fluoride in them so we boost the level up to beneficial levels.*

*Fluoride is added to the water in our Central Water System and the Selma and Village Green at Elysian Heights Community Systems. The Central Water System and those Community Systems which fluoridate have generally between 0.8 and 1.2 mg/L of fluoride.*

## WQ DBPs

### **What are disinfection byproducts?**

*The use of chlorine to treat water to make it safe and palatable has been around for a long time. Chlorine is easy to use, relatively inexpensive, and readily available. In countries with poor sanitation, the use of chlorine can save lives.*

*But the use of chlorine is not without concern. When chlorine reacts with natural matter such as decaying plant material in water, disinfection byproducts (DBPs) are formed. Two DBPs which are regulated by the EPA and VDH include Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5).*

*The EPA has set a limit on TTHM at 80 ppb and HAA5 at 60 ppb, as a running annual average. We are required to take samples every three months from nine locations in our Central Water System, and one sample every three years in our Community Systems (with exception of Selma where one sample is collected annually with anticipated reduced schedule to once every three years).*

*The concern with DBP's in drinking water is the continuous nature of exposure over a lifetime. Loudoun Water's results indicate that our drinking water contains less than half of EPA's maximum contaminant level.*

## WQ Lead

### **Is there lead in my water?**

*Water is essentially free of lead as we deliver it to your home. Any measurable lead in the tap water would come from lead pipes or brass and bronze fixtures in your home plumbing that contain lead. As water comes in contact with metals containing lead, a very small amount of lead can leach out and into the water. The best precaution if you are concerned, is to let the cold water run for 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using it for drinking or cooking.*

*Lead is also found in lead-based paints in older homes, in dust and dirt from outside, and on some pottery and ornamental items. You need to look at your whole environment if you are concerned about lead.*

*The US Environmental Protection Agency has set an Action Level of 15 ppb for lead in tap water. **This means that Loudoun Water must ensure that water from our customer's tap does not exceed this level in at least 90 percent of the homes sampled (90th percentile value).** This Action Level, if exceeded, triggers treatment or other requirements which we must follow.*

## **WQ Bacteria**

### ***Are there bacteria in my water?***

*Water, air, food, and our environments are not sterile. In fact, our immune systems need a certain degree of contact with germs to develop their defense mechanisms – that is the basis for inoculations and immunities. But they should be sanitary and safe from harmful levels of microorganisms.*

*We test the biological quality of the tap water to make sure it is sanitary and safe. We add chlorine to disinfect it (free it of harmful organisms) and to make sure bacteria do not grow in it and become a problem.*

*As a result of our effective water treatment processes and our use of chlorine, we do not suffer from the diseases that many people still suffer from around the world.*

*For most people with healthy immune systems, the natural microorganisms in water and on foods and in the air are not harmful. If you have a special need you should consult your primary care physician who can give us a call for more specific information.*

## **WQ Pharmaceuticals**

### ***Pharmaceuticals and personal care products in water***

*Loudoun Water's primary objective is the protection of public health through the delivery of high-quality drinking water. While pharmaceuticals are an issue of interest, research to date has not demonstrated an impact on human health from pharmaceutical compounds at the trace levels discovered in drinking water.*

*There are currently no approved methods for detecting personal care products and pharmaceuticals in drinking water because they appear in such minute quantities. Our major supplier, Fairfax Water, has been actively working with leading researchers to develop an appropriate testing protocol for detection of very low levels for a variety of these compounds. They are currently developing a testing plan for the source and treated waters. They are continuing to work closely with others in the drinking water community to advance the science and understanding of this issue, and will take the steps necessary to continue providing high-quality drinking water.*

*In addition to research and testing, Fairfax Water also employs one of the most advanced water treatment technologies, ozonation. Research has shown that using the combination of ozone and granular activated carbon, which Fairfax Water uses to treat all of the water in its system, is highly effective in removing broad categories of personal care products and pharmaceuticals. Likewise, our reclamation facility does the same with wastewater, before returning it to the environment, through a combination of membranes, granular activated carbon, and ultraviolet light.*

## **WQ Chlorine**

### **Why does my tap water taste like chlorine?**

*Chlorine is added to water at the treatment facilities to disinfect the water or rid it of harmful bacteria or germs. Chlorine is also added to the water before it leaves the treatment facilities so that as it travels the many miles of pipe to your home, bacteria do not grow before it reaches your tap. Thus, there is always chlorine in the water but at very low levels.*

*Fairfax Water, our main supplier for our Central Water System, uses chloramines, a combination of chlorine and ammonia, nine months out of the year as the secondary disinfectant (the disinfectant present in the distribution system). Fairfax water typically switches to free chlorine as the secondary disinfectant during the March/April – May/June timeframe when conducting annual flushing. The chloramine product has less of a taste or smell than bleach chlorine. It also lasts longer. It also does not cause the pipes to rust like bleach chlorine does. Both chlorine and chloramines will degrade elastomer materials (rubber materials) over time, however chloramines will typically degrade them at a faster rate than chlorine. Customers will periodically need to change their rubber gaskets in their homes, such as in the sinks, faucets and toilets.*

*If you wish to reduce the chlorine flavor in your tap water, store tap water in a clean container in your refrigerator. Colder water has a less noticeable chlorine flavor.*

## **WQ Musty**

### **What is that musty or earthy odor in my water?**

*Earthy and musty odors in water occur worldwide, and, aside from the chlorine odor of tap water, are the most common found. They originate from nature and have no known health effects at the natural levels found.*

*Earthy and musty odors can be found in natural waters and in soils, as well as in beets and in corn (because they are grown in contact with soils). In waterways, when certain algae grow very well, high levels of these odors can be produced. There are certain types of soil bacteria that also grow in water that produce these chemicals, but they are less common in our waters.*

*A slight earthy/musty odor in the tap water produced from surface water supplies, as is the case for Loudoun Water, can be typical in the fall, especially after a hot, dry summer. Algae are prevalent in all surface waters and can be especially abundant during the warm summer months. As the weather becomes colder and the water temperature decreases, the algae will begin to die off and release two nontoxic compounds that can cause an earthy or musty smell. These compounds are named methylisoborneol (MIB) and geosmin. We can smell these compounds in very minute quantities of approximately 5 nanograms per liter (that is 5 parts per trillion or 5 seconds in 320 centuries). It is interesting to note that one theory holds that our keen sense of detection for these compounds was a key survival technique for our distant ancestors in that when they could smell that earthy or musty odor, water was within reach and not far away. Sensitivity varies greatly among people.*

*The most common treatment is to add carbon to the water, as it is being treated, to absorb or soak up the flavors. For our Central Water System, our main water supplier, Fairfax Water, uses both granular activated carbon and ozone to treat for these tastes and odors. Our other water supplier, the City of Fairfax uses carbon.*

## **WQ Metallic**

### ***My tap water has a metallic taste***

*Metallic and astringent tastes, noticed as a lingering aftertaste, more often arise from the corrosion or leaching of plumbing materials, such as copper and iron. The most noticeable condition is rusty water from high levels of iron. But metals that leach from plumbing into water can be tasted at low concentrations that do not impart an off-color to the water. The metallic taste is actually not a taste, such as with sweet and salty, but is a sensation from nerve endings in the mouth. Low levels of metals may not be noticeable upon brief sips of water because as one drinks more and more water the sensation builds. This is similar to the spicy hot taste of some foods. The first taste of a moderately spicy food might yield a favorable response, until several bites later when the sensation builds and you find the sensation to be quite noticeable.*

*The corrosion of plumbing materials can be enhanced by stagnant water conditions (such as when a house is closed up for long periods of time and no one uses the water) or by hot water or faulty plumbing. Metallic tastes can also occur when new plumbing or fixtures are installed, and the metallic materials have not yet passivated or settled down.*

*The EPA has set Secondary Maximum Contaminant Levels or guidelines for constituents that affect the aesthetic quality of drinking water. Copper should not exceed 1 mg/L. Iron should not exceed 0.3 mg/L. Zinc should not exceed 5 mg/L. These three metals are the most common metals found in metallic tasting water.*

*If your water tastes metallic, run the cold water for a few minutes to get fresh water into your home plumbing.*

## **WQ Sulfur**

### ***My tap water has a rotten egg or sulfur smell***

*A rotten egg or sulfur smell usually indicates bacteria growing in your drain or hot water heater. Disinfect the drain with a household-cleaning agent such as bleach. Next, run the cold water for awhile, then fill a cup of cold water from the sink where you notice the odor, take the cup to another room and determine if you smell the odor. If you still detect the odor, it may be in the water heater. You can fill a cup of hot water from the sink and determine if you detect an odor from it. Turning the temperature of the water heater high for a short period of time will disinfect the water and neutralize the smell. Make sure to turn the temperature back down on the water heater when you are done to prevent scalding.*

## **WQ Towels**

### ***My clothes and towels smell after they are wet***

*If your clothes or towels smell sour after they are laundered, the washing machine must be investigated as a possible source of the odor. If the washing machine is imparting an odor to the clothing or towels, it will be much more noticeable when the laundry is wet. Once the laundry is dry the odor subsides substantially but returns when the items become wet again. There are two possible causes of odors imparted to laundry in a washing machine:*

- *Clothes generally start to smell “sour” when they remain wet for too long.*
- *The second cause comes from the washing machine itself. Any portion of the washing machine that may collect lint, dirt and moisture may over time become a source of odor that is imparted to the clothing. The source could be a lint filter (for those washing machine models having a lint filter), or it could be a “bellows” assembly around the door of a front loading washer. Trapped lint and dirt in either of these two items, if not cleaned out, will impart an odor to items in the washer. Clean the lint filter, and the area around the lint filter with soap, water, or a bleach solution, and a toothbrush.*

*Verify whether the odor is in the cold water supply by filling a glass with cold water after flushing the plumbing within the home, and sniffing the glass of cold water to determine if it has an odor. It may be helpful to sniff a glass of hot water to help determine if the hot water heater is imparting an odor to the water.*

*Run some chlorine bleach through the washing machine to help remove residual odors. Prior to doing so, consult the manufacturer. This may also not be feasible if you are on a septic system.*

*If there is a treatment system in the home, improper maintenance of a home treatment system could possibly cause the odor.*

## **WQ Bleach**

### ***My laundry has bleach stains***

*It is possible that the bleach dispenser in the washing machine is inoperable, and contains bleach in it that is not releasing properly. Another explanation is that many facial cleansing products contain chemicals that bleach fabrics upon contact.*

## **WQ Milky**

### **My water appears milky**

*Water carries oxygen or air in it. This is why fish can live in water; they breathe the oxygen through their gills. Fish tanks have aerators in them to make sure there is always enough oxygen for the fish to breathe. Some fish, such as trout, need more oxygen than other fish such as goldfish, and so they need colder, mountain water to live. The colder water holds more oxygen.*

*In the winter, water contains more oxygen or air because it is cold. When it is delivered to your house, it warms up and releases oxygen. You turn on the tap and, like shaking up a bottle of warm soda, the air fizzes up. As the glass of water sits, the water clears from the bottom of the glass upward as the air bubbles rise and escape. All of these tiny air bubbles give the glass of water a milky appearance under natural or household lighting.*

## **WQ Pink**

### **Pink slime on fixtures**

*Bacteria and molds grow well in moist environments. Bathtubs and sink drains and tiles are good places for this. A humidifier is also a good place for this.*

*These bacteria or molds are common and natural. They can be found in the air, in soil, in water, or on household surfaces. Orange and pink are common colors for many environmental bacteria such as the Proteobacteria.*

*The bacteria found in the pink slime belong to the Proteobacteria, a large and diverse phylum (the second largest group of bacteria) of Gram-negative bacteria. Shower curtains often contain pink slimes which are made up of both the sphingomonads and Methylobacterium spp. with Methylobacterium the likely cause of the pink coloration. Nonetheless, slimes and biofilms typically contain a symbiotic community of bacteria.*

*The slime, caused by microbial growth on surfaces, are best controlled by cleaning and disinfecting with common household cleaning products*

## **WQ Black Specks**

### ***Black specks in my tap water?***

*Perhaps the most common cause of black specks in tap water is from the deterioration of rubber materials used in plumbing fixtures. Gaskets and O-rings can degrade over time and the pieces can collect in toilet tanks and around faucets. Braided stainless-steel flex connections and toilet tank valves and gaskets are common sources. If they are made of neoprenes, nitriles, isoprene and natural rubber materials they tend to degrade when in contact with the chlorine or chloramines in the tap water. Chloramines cause a more rapid breakdown with cracking and loss of elasticity and strength. You need to look for materials that are resistant to chloramines such as silicon-based rubber, synthetic polymers or fluorocarbon, or copper and nylon flex connections. The products should be labeled with explanations that they are more resistant to chlorine and chloramines.*

*If the specks can be smudged between your fingers, then it is likely a deteriorating rubber material. If it does not smudge between your fingers, then it is likely sediment or manganese. For sediment or manganese, flush the lines in your home and give us a call so we can flush the water distribution mains servicing your home to help clear the pipes.*

*Newly constructed or renovated buildings can experience similar problems with particles. Sometimes plumbers disturb a plumbing system as they do their work. Sometimes new systems need to be broken in. Flushing the system really well can be a remedy.*

## **WQ White Specks**

### ***White specks in my tap water?***

*Particles can clog aerators and showerheads because these fixtures often have tiny screens that collect material. The screens are called aerators because they break up the flow of water as it comes out of the faucet. The particles that get trapped on the aerators can come from a variety of places. White specks in your water are most likely caused either by deterioration of the dip tube in your hot water heater or calcium precipitate. The same faucet delivers both hot and cold water in most homes. That is why material from the hot water heater can clog the cold water faucet.*

*Place the white specks in vinegar. If they float, it is a deteriorating dip tube and you need to replace it. There are dip tubes in heaters that direct the water to circulate and get heated. A dip tube is often made of polypropylene, a nontoxic plastic material. This plastic can break apart or disintegrate, and the small pieces can be carried away in the water to the faucet where they collect on the faucet's aerator.*

***Eventually, the performance of the heater will be affected. If you suspect that this could be your problem you should contact a reputable plumber and let the plumber check it out. It is an easy job for a plumber to replace the dip tub.***

***If the specks react by fizzing in the vinegar, it is calcium precipitate. You can flush the lines in your home by letting water run freely out of the faucets for a few minutes. You may also want to consider a home water treatment filter unit to remove calcium from your water.***



## **WQ Brown**

### **Brownish or reddish-brown colored water**

*If your water has a brownish or rusty color, it is from iron or rust. Most of the pipes that we use to deliver the water to your house are made out of iron. Older mains can impart rust to the water. Newer mains are lined to prevent the contact of the water with the iron in the mains. When there is an upset in the system such as a water main break, or when a valve is operated or water flow is changed, it can stir up the rust. When this happens it can be unpleasant but it is not a health concern.*

*A rust problem is usually short lived – it should be gone in a day or less. Do not wash clothes during this time because it will stain them. Once it is gone, flush your cold and hot water to avoid rust being present in your plumbing.*

## **WQ ICE**

### **Why are there white particles in my ice cubes?**

*Ice is formed from pure water (hydrogen and oxygen) therefore the minerals such as calcium and magnesium normally found in the water sometimes end up as visible particulates in the core of the ice cube. The white particles are not harmful.*

## **WQ Testing**

### **Can I get my water tested?**

*Our water is tested constantly at the treatment facilities of our water supply. In addition to that, we collect tap water samples from throughout the distribution system daily.*

*Our water quality data are available to you, and are located at <http://www.loudounwater.org/water/quality/report.cfm?pl1=4&pl2=1>.*

*If after reviewing this information, you still have a concern, please call our customer service department and we will arrange for a field service technician to test your water for bacteria or other constituent depending on the situation.*

## **WQ Bottled**

### ***Is bottled water safer to drink than tap water?***

*There are numerous brands of bottled water. Bottled waters have labels that tell you where the water comes from. We cannot recommend any particular brands.*

*The main reason people might prefer bottled water is because it does not contain chlorine, and it therefore does not have the chlorinous flavor that tap water has. However, bottled water can sit around for a long time on store shelves before it is sold.*

*Bottled water is not necessarily safer to drink than your tap water. The standards EPA sets for the drinking water we provide are much stricter than the standards set by the Food and Drug Administration for bottled water. Consumers who choose to purchase bottled water should carefully read its label to understand what they are buying, whether it is a better taste, or a certain method of treatment. More information on bottled water is available from the International Bottled Water Association.*

## **WQ Filters**

### ***Home water treatment units***

*Home treatment units may be effective at improving a particular taste or odor issue; however, they do not provide an increased measure of safety. In fact, if the treatment system is not maintained properly, bacteria can grow in the unit and contaminate the water. If you choose to purchase a home water treatment unit, carefully read its product information to understand what you are buying. Be certain to follow the manufacturer's instructions for operation and maintenance, especially changing the filter on a regular basis.*

*Home treatment devices should also be certified (for example, should display an NSF seal) proving that they can do what they say they do. For more information, refer to EPA's Home Filtration Fact Sheet, located in Virginia Department of Health website at:  
<http://www.vdh.virginia.gov/drinkingwater/consumer>.*

## **WQ Information**

### ***How to receive more information***

*For information on your water quality, or frequently asked questions, please visit our website at [www.loudounwater.org](http://www.loudounwater.org).*

## **WQ Water Heater**

### ***How hot should I set my water heater?***

*There are two problems that commonly arise in tap water that are caused by the hot water heater. One problem is the appearance of a hydrogen sulfide odor- a rotten egg odor or a sulfur-type of odor. The other problem is that bacteria can grow in a hot water heater.*

*The hot water heater is designed to produce hot water, not drinking water. It is a holding tank that presents a warm environment, which can be conducive to bacteria growth. One type of bacteria forms sulfurous odors which can be detected at the sink upon using the hot water.*

*The bacteria of most concern are called Legionella. These bacteria are found naturally but when they grow in hot water heaters they become a concern. These bacteria have been known to cause pneumonia, particularly in older people that have less active immune systems. Exposure comes from inhaling water mists, such as when taking a shower.*

*If the hot water heater's temperature is not kept hot enough, these problem bacteria can grow. The hot water should not be so hot, though, that someone could get burned by it. It is general practice to keep the temperature of the hot water at about 110° F to 120° F, as measured at the faucet. The Uniform Plumbing Code recommended that hot water temperature not exceed 120° F or 49° C. Above 120° F there is the risk of scalding (in a few minutes of exposure a person could get a second or third degree burn). Some people turn the heater down or off when they are away from home for a while. If you do this, you may need to turn it back up when you get home, and flush the hot water for a period of time, before you use it.*

## **WQ Pressure**

### ***Is my water pressure correct?***

*The Virginia Department of Health requires water utilities to maintain a minimum water pressure of 20 pounds per square inch (psi) within the distribution system. This ensures adequate pressure throughout your home, but not so much to add stress to your pipes. If the pressure at the service tap exceeds 80 psi, then provisions of the Uniform Statewide Building Code apply, which require the installation of a privately owned and maintained pressure-reducing valve (PRV). Most houses built after 1972 fall into this category and are already equipped with a PRV to keep pressure at or below 80 psi. The PRV is a bell-shaped device, approximately four inches in length, normally located near the main water valve of your home. If the water pressure in your home gets too high, it can cause stress to your pipes, causing them to knock or leak. If this is the case in your home, we recommend you check and if needed, adjust your PRV, or call a plumber to do so. If you do not have a PRV, it is recommended that you install one, as pressure can fluctuate throughout the distribution system.*

## **WQ Break**

### ***Why do Water Mains Sometimes Break?***

*Most of the water mains in our service area are made out of ductile iron. Ductile iron mains are affordable and reliable. These water mains can last a long time if they do what they were made to do: transport water from one place to another. Eventually, the condition of the water main itself or the conditions of its surroundings lead to cracks or joint failures or more serious breaks. Most often this happens after 100 years, but sometimes it happens within only 50 years. Ideally, a main would be repaired or replaced before it completely fails.*

*The unfortunate effects of a broken main include the temporary interruption of water service, occasional water damage to property, a street that may be congested while the main is replaced, and a temporary case of rusty water.*

*There are various contributing factors that could lead to a water main failure or break. These factors can act individually or in combination. Any of the factors may themselves have several causes. One complex factor is the force exerted on the ductile iron water main. This force comes from various places. The main could be responding to changes in temperature, which cause contraction and expansion of the metal. The weight of the soil over top of the buried main in the street, and whatever is on top of that, exerts another force. Wet soil that expands upon freezing can add stress to the main that is in contact with it. Vibrations on the main can be caused by nearby activities such as trucks riding down the street overtop of the main.*

*Another complex factor is the erosion of the supporting soil beneath the main that is buried. In the construction of a main, special sand and soil are laid beneath it to help it bear the forces that it will feel. But the movement of water in the ground beneath the main can wash away this material. The movement of water in the ground can create small or large caverns under the pipe. The force now bearing down on top of the pipe must be taken by the pipe itself, without the help of supporting material underneath. If these forces exceed the strength of the pipe, the main breaks. Often times these breaks occur at the weakest part of the main, the joint.*

*Underground water can come from various places, such as natural springs. Another source of water is a leak in a water main or a customer's service pipe. Sometimes these leaks come from cracks in the mains. Most often, these leaks start at the joints. Water mains are manufactured in lengths of about 20 feet. Loudoun Water looks for leaks and answers customer calls that pinpoint signs of leaks.*

*Yet another complex factor is corrosion. An iron main can corrode on the outside and on the inside. Our water quality is not corrosive to the mains. In addition, mains are lined, which acts as a barrier between the iron and the water to reduce the corrosion or rusting of the iron in the mains. Corrosion on the outside of a main can be caused by the many different conditions of the surrounding soil. Loudoun Water takes precautions to protect buried mains from their surrounding environment.*

*These are some of the principal factors, but they are not the only factors that act individually or in combination to lead to a main break. Other factors could include a street excavation that accidentally disturbs a water main, and the misuse of fire hydrants.*

## **WQ Off**

### ***Why would my water be turned off?***

*Occasionally, your service may be interrupted due to a water main break, a power outage or during long periods of freezing temperatures when meters freeze. Please call customer service if you are without water. Use our after-hours emergency number when calling evenings or weekends.*

## **WQ Well**

### ***What should I do if I have my own drinking water well?***

*If you have your own well, you are responsible for making sure that your water is safe to drink. Private wells should be tested annually for nitrate and bacteria to detect contamination problems early. Test more frequently for other contaminants, such as radon or pesticides, if you suspect a problem. For more information on private drinking water wells, check with the Virginia Department of Health, Environmental Health Services, or the Loudoun County Health Department.*