

Water Quality Core Messages



NORTH
TEXAS
MUNICIPAL
WATER
DISTRICT



In an effort to provide thorough, consistent responses to inquiries from residents and customers, NTMWD compiled detailed background information for internal use. These messages are intended to aid in reply to phone calls, emails or social media questions, and include information regarding the annual temporary change in disinfectant, general water quality and treatment, lessons learned over the last few years, and helpful facts and resources.

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KEY MESSAGE #1:

Water disinfection is necessary to protect public health and keep our water safe.

- National health professionals rank water chlorination as one of the top 10 most important public health achievements in our lifetime.
- According to the Centers for Disease Control (CDC) chlorine-based disinfectants remain the most widely used water disinfectant in the world, and the only disinfectant approved by the Texas Commission on Environmental Quality (TCEQ) and U.S. Environmental Protection Agency (EPA) for the second step of water disinfection.
- About half of the U.S. population is served drinking water disinfected with chloramine (chlorine + ammonia), the method used by NTMWD, which is a longer lasting disinfectant than free chlorine.
- Disinfection is required to kill harmful microorganisms and viruses that are known to cause diarrhea, vomiting, cramps and other serious illnesses or even death.
- The benefits of disinfection far outweigh potential risks according to the Centers for Disease Control, the World Health Organization and numerous other scientific and medical organizations.

KEY MESSAGE #2:

NTMWD uses proven, common and highly effective disinfection methods to treat the water it delivers to 1.8 million North Texans.

- NTMWD's water treatment processes are among the best available.
- Disinfection involves a two-step process that first treats the water at the treatment plant and second adds disinfectant to maintain water quality as it travels long distances through pipes to homes and businesses.
- NTMWD disinfects its water using a combination of ozone and chlorine (first step) and then chloramine, which is chlorine + ammonia (second step). For a one-month maintenance period each spring, ammonia is temporarily suspended and only chlorine is used to maintain disinfection of the water.
- Only chlorine-based disinfectants are approved by the TCEQ and EPA for the second step of water disinfection.
 - TCEQ and EPA require water treatment facilities and distribution systems to maintain a minimum level of 0.2 milligrams per liter (mg/l) or 0.2 parts per million (ppm) for free chlorine and 0.5 ppm for chloramine at all times. The maximum level is a running annual average of 4 mg/l or 4 ppm.
 - These levels are safe for consumption.
 - Some people can sense (through taste or smell) chlorine in water at less than 1 mg/l or 1 ppm as reported by the CDC.
 - The water leaving the treatment plant typically has a higher level of chlorine or chloramine to ensure it stays disinfected all the way to the tap. The levels diminish after it leaves the treatment plant and the longer it is in the system.
- NTMWD's water travels long distances to communities in 10 counties and 2,200 square miles, and the water must remain disinfected as it goes through miles of pipes to the tap.
- While ozone is 100 times more powerful than chlorine, ozone is not a long-lasting disinfectant. That is why chlorine and chloramine are added to maintain required disinfection levels as the water travels long distances through pipes to homes.

KEY MESSAGE #3:

Each spring, NTMWD temporarily changes the disinfectant used to maintain the system and high water quality year-round.

- Chlorine is a stronger disinfectant than chloramine and is used for one month each spring to help maintain the system throughout the year.
- The use of ammonia is temporarily stopped and only chlorine is used to keep the water disinfected as it travels through many miles of pipe.
- During the annual temporary change in disinfectant, water providers (cities or utility districts) who receive NTMWD water may help initially move the chlorine-disinfected water through the system faster by flushing the chloramine-disinfected water from fire hydrants.
- The combination of using chlorine disinfectant and flushing the pipes helps maintain the system and water quality year-round.
- The temporary change in disinfectant is done earlier in the year to maintain the system before hotter temperatures, which can increase the potential for microorganism growth in pipes. Flushing the pipes in the spring also helps conserve valuable water that will be needed as water demands increase in the summer months.
- This preventive measure is a common, best practice for as many as 40 percent of water providers.
- NTMWD has conducted this temporary change in disinfectant annually for over 10 years, and high water quality has always been maintained.

KEY MESSAGE #4:

Residual chlorine is the minimum level of chlorine required to keep water disinfected as it flows through the pipes in the distribution systems.

- Residual chlorine is necessary to protect you from harmful microorganisms.
- The intensity of the chlorine taste and smell may depend on the distance your house is from the water treatment plant.
- The Texas Commission on Environmental Quality (TCEQ) and Environmental Protection Agency (EPA) require water suppliers to maintain a chlorine level residual through the far reaches of their distribution systems.

KEY MESSAGE #5:

Ongoing water testing is performed, reported to TCEQ (the state regulatory agency) and available to the public year-round.

- NTMWD conducts a quarter million tests annually in a state-certified laboratory to ensure water safety. A monthly water quality report is [available online](#) for the public.
- The Texas Commission on Environmental Quality (TCEQ) conducts routine sampling and tests on the NTMWD and city systems through an independent laboratory to confirm water quality compliance with state and federal standards.
- Chlorine levels in the NTMWD system during the temporary disinfectant change period remain consistent with the rest of the year and within the annual average levels required by TCEQ.

KEY MESSAGE #6:

There are some people who may be more sensitive to taste, smell or skin contact with chlorine. That does not mean the water is unsafe; it just may be more noticeable to some. There are simple steps that those who are sensitive can choose to do to make the taste and odor less noticeable.

- Putting a pitcher of water in the refrigerator overnight to allow some of the chlorine taste and odor to dissipate.
- Adding a slice of citrus or cucumber to the water for a few hours.
- Adding a crushed 1000 mg Vitamin C tablet to bath water.
- While not necessary for water safety, some people opt to install water filters to remove chlorine.
 - These devices can be attached to a water container or faucet, or be installed under the sink. Others can be installed to filter bathroom faucets or the entire household water system.
 - Look for NSF/ANSI (NSF International/American National Standards Institute) approved labels on filters before purchasing.
 - Consumers are highly encouraged to follow manufacturers' maintenance guidelines for filters to avoid bacterial growth.
 - Resources available to public on [NSF.org](https://www.nsf.org) and [DrinkTap.org](https://www.drinktap.org).

KEY MESSAGE #7:

Public inquiries about the temporary change in disinfectant have been thoroughly evaluated by the Texas Commission on Environmental Quality (TCEQ), who verified that the water is safe. Other independent experts also reviewed the process and came to the same conclusion.

- TCEQ responded to citizen inquiries in 2018 and published an analysis regarding the quality of water from NTMWD's Wylie Water Treatment Plant in May 2018. The report concluded:
 - "Exposure to chlorine, monochloramine and ammonia concentrations measured in the water quality samples collected by TCEQ would not be expected to cause short- or long-term adverse health effects."
- Medical toxicologist Scott Phillips, MD validated that ([watch video](#)):
 - "Temporarily changing the water concentrations of disinfectants does not put the public at risk. The chlorine concentrations are virtually the same year-round and it's absolutely necessary to remove the bacteria from the pipes to keep the drinking water safe."

KEY MESSAGE #8:

All commonly used water disinfectants form "disinfection by-products" or DBPs.

- DBPs are formed when natural organic matter reacts in water with chlorine or other disinfectants.
- The U.S. Environmental Protection Agency (EPA) regulates DBPs (Trihalomethanes or THMs and Haloacetic acids or HAA5) at levels that current research considers safe.
- NTMWD's use of ozone and chloramine actually reduces the DBPs in the water that are regulated by the EPA and TCEQ.
- The TCEQ tests our water for DBPs to ensure the levels are in compliance with EPA regulations.

- Independent testing of the water conducted for NTMWD confirmed the water met the DBP requirements during temporary change in disinfectant time periods.
- NTMWD voluntarily increased the frequency of DBP testing from quarterly to monthly and posts results online.
- NTMWD relies on our state and federal regulators, the Texas Commission on Environmental Quality (TCEQ), the Environmental Protection Agency (EPA) and the medical community to thoroughly evaluate and provide guidance and regulation on our treatment processes to protect public health both in the short and long-term.
- Medical toxicologist Scott Phillips, MD validated that ([watch video](#)):
 - “Disinfection byproducts at the concentrations in drinking water would not be expected to cause adverse health effects. The EPA regulates disinfection byproducts such as Trihalomethanes to concentrations sufficiently low so they will not cause health effects.”

KEY MESSAGE #9:

NTMWD recognizes that there has been more public concern expressed in recent years about the water quality during our temporary change in disinfectant. We take these concerns seriously and retained outside water quality experts to evaluate if there was anything different that would have impacted water quality during the one-month disinfectant change.

The evaluation determined:

- Untreated and treated water quality was not significantly different during the 2018 change period from other years.
- The levels of chlorine disinfection in the water being piped from our main treatment plant in Wylie were consistent with previous years.
- Slightly higher chlorine levels at some city delivery points were noted in 2018 compared to previous years, but these were minor in nature and do not appear to be the main reason for complaints.
- During the temporary change in disinfectant, the mixing of chlorine-treated water with chloramine-disinfected water (monochloramines) can lead to the formation of more odorous forms of chloramines (di- and tri-chloramines).
- Although these types of chloramines are not harmful, they can have a stronger odor and taste, even when present at low levels.
- Lower water demand in early 2018 due to significant rainfall may have led to more odorous chloramines staying in the system longer. This is one reason why it’s recommended that cities perform system flushing during startup of the temporary change in disinfectant to move the more odorous water through the system more quickly.

How we applied these lessons learned. We continue to:

- Encourage cities to flush water through their systems and hydrants to maintain water quality in the system and help reduce taste and odor issues during startup of the disinfectant change period.
- Reduce or minimize storage of water in the system at the onset of the conversion process.
- Coordinate with cities to move water through the system faster to help reduce taste/odor concerns.
- Enhance system operations guidelines with best practices, technical resources and information to share with the cities served, including the recommendation that cities perform regular flushing during the temporary change period.
- Conduct additional water quality sampling to provide a better understanding and more information for the cities and consumers.

KEY MESSAGE #10:

There are some entities that should be notified of this change, such as hospitals, dialysis centers, manufacturing companies and fish aquariums, so they are aware of how water disinfected with chloramine and chlorine may impact their operations.

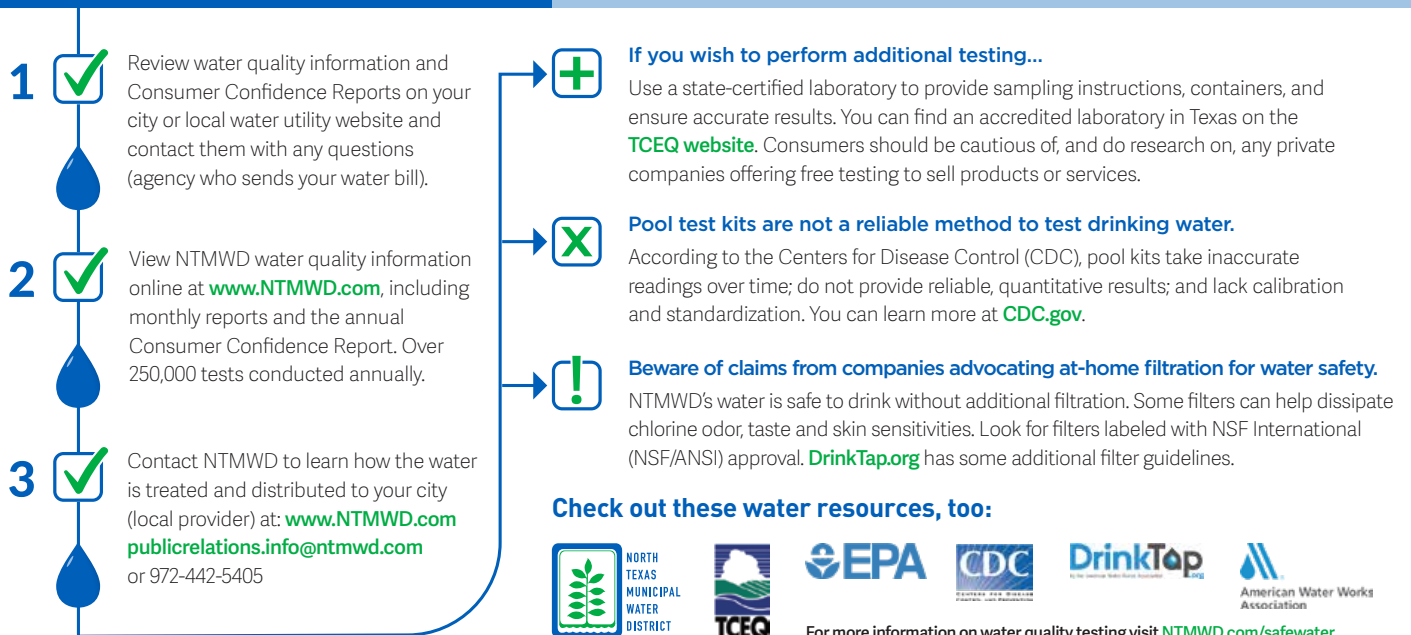
- **Dialysis:** The Association for the Advancement of Medical Instrumentation sets standards that specifically address the removal of both chlorine and monochloramine. Industry standards require that a nurse, technician or trained caregiver test for both chlorine and monochloramine after the purification process to ensure that these chemicals have been removed from the water before it is used in the dialysis machine. Read more at [AAMI](http://AAMI.com).
- **Aquatic Animal Care:** The process for removing monochloramine is different from some of the methods used to remove chlorine.
 - **Chlorine:** Place the water in an open container and let it rest for a few days or purchase a de-chlorinate water conditioner. Do one of these treatments before placing fish in the water. See [CDC](http://CDC.com).
 - **Chloramine:** A watering condition agent or activated carbon filter is needed to remove chloramine. Consult with your pet supplier for recommendations.

KEY MESSAGE #11:

Customers who continue to have concerns about the water quality in their home are urged to follow a few recommendations before additional testing is performed. It's important to use a state-certified laboratory for any water testing to ensure accurate results, and to use caution with claims from companies advocating at-home filtration for water safety.

Questions or Concerns about Your Water?

Homeowners who want more information about their water quality should consider these guidelines.



Customers who already have water test results from home testing or other sources should consider the following information regarding the data included in the report.

- There are many businesses who claim to conduct accurate water testing and provide results to convince consumers they need a home water filtration system which they happen to sell. NTMWD advises caution in using these services and offer tips on water testing on our [website](#).
- Without knowing the validity of the test results provided, here's some information on the main data points often provided - water hardness, pH, chlorine, and total dissolved solids (TDS).
 - The level of **water hardness** depends primarily on the water source. Hard water build-up comes from naturally occurring minerals — such as calcium bicarbonate, magnesium carbonate, iron, lime and others — that are present in lakes and other water sources across North Texas. The treated water supplied by NTMWD is generally considered “moderately hard” primarily due to the minerals found in Lavon Lake. At levels within the regulatory standard limits, these minerals pose no harm to human health or safety. They can, however, cause spots on clean dishes and “lime scale” on plumbing fixtures from the leftover mineral deposits once hard water has evaporated. Hard water can have some benefits, too. Humans need minerals to stay healthy, and the World Health Organization (WHO) states that drinking-water may be a contributor of calcium and magnesium in the diet and could be important for those who are marginal for calcium and magnesium intake. (more information in message #12)
 - **pH** is a measure of how acidic/basic water is. The range goes from 0 to 14, with 7 being neutral. The EPA has set the secondary maximum contaminant level (MCL) for pH with a range from 6.5-8.5.
 - Chlorination is the process of adding **chlorine** to drinking water to disinfect it and kill germs. Only chlorine-based disinfectants are approved by the TCEQ and EPA for maintaining water disinfection in the distribution system (to keep it safe from the treatment plant to your tap). The TCEQ and EPA require water treatment facilities to maintain a minimum chlorine level of 0.5 milligrams per liter (mg/l)—or 0.5 parts per million (ppm)—during normal operations and a maximum running average of 4 mg/l (or 4 ppm). Anything within this range meets the Safe Drinking Water Act requirements. According to the Centers for Disease Control, chlorine levels up to 4 milligrams per liter (mg/L or 4 parts per million (ppm) are considered safe in drinking water. At this level, no harmful health effects are likely to occur.
 - The level of **TDS** (Total Dissolved Solids) also depends on the water source. The total dissolved solids are mainly inorganic salts (calcium, sodium, chloride, etc.) dissolved in water. The EPA Secondary MCL is 500 mg/L which is higher than the results you show.

KEY MESSAGE #12:

The treated water supplied by NTMWD is considered “moderately hard” due to the minerals found in Lavon Lake. In addition to the effects hard water may have on appliances and plumbing fixtures, some people may have more sensitivity through skin contact.

- Hardness of the water does not alter the safety of NTMWD’s drinking water. The treated water delivered by NTMWD meets or surpasses all state and federal Safe Drinking Water Standards.
- Those with sensitivity may experience dry and itchy skin which is a result of a soapy residue that hard water may not completely rinse away. Here are a few suggestions to help address those possible effects:
 - Use less soap products to decrease soapy residue, or use specified “cleansing” or “dermatological” soap.
 - Avoid extra hot water, and take shorter showers to reduce your skin’s exposure and sensitivity.
 - While not necessary for water safety, some people opt to install water filters to “soften” the water. (See recommendations in Key Message #6.)
- Depending on lake conditions, water hardness may be higher or lower throughout the year and are monitored on an ongoing basis.
- Water hardness values can be found in our Monthly Reports posted online - [NTMWD.com/Water-Quality-Reports](https://www.ntmwd.com/Water-Quality-Reports).
 - Some appliances and in-home filtration systems require a water hardness value in “grains per gallon” to install or use at optimal settings.
 - To determine the grains per gallon, take the water hardness result (mg/L) and divide by 17.1. The resulting number will be the grains per gallon.
- We have more information including a water hardness fact sheet posted online - [NTMWD.com/Water-Hardness](https://www.ntmwd.com/Water-Hardness).

KEY MESSAGE #13:

Water fluoridation, or the controlled addition of fluoride to public water supply, is a common practice to decrease the risk of tooth decay and prevent cavities.

- The source water treated by NTMWD has naturally occurring fluoride with an **average concentration of 0.3 ppm**.
- At the request of its Member Cities, NTMWD **adjusts the fluoride level in treated water to approximately 0.7 ppm** per the Health and Human Services recommendations.
- The range of fluoride levels in NTMWD water is consistently **well below the maximum level of 4.0 ppm** per the Health and Human Services recommendations.
- Fluoridated water is safe and has greatly improved the dental health of consumers. It is recommended by nearly all public health, medical and dental organizations including the American Dental Association, American Academy of Pediatrics, U.S. Public Health Service, and World Health Organization.
- While not necessary for water safety, some people opt to install in-home water treatment systems to remove fluoride from the water. (See recommendations in Key Message #6.)
- Fluoride levels can be found in our Monthly Reports posted online - [NTMWD.com/Water-Quality-Reports](https://www.ntmwd.com/Water-Quality-Reports).
- We have more information including a fluoride fact sheet posted online - [NTMWD.com/Water-Treatment/Fluoridation](https://www.ntmwd.com/Water-Treatment/Fluoridation).

KEY MESSAGE #14:

NTMWD has extensive information available on our website [NTMWD.com/Water-Quality](https://www.ntmwd.com/Water-Quality).

[NTMWD.com/SafeWater](https://www.ntmwd.com/SafeWater) (annual temporary change in disinfectant)

[4-page fact sheet overview](#)

[Top 8 FAQs infographic](#) (also available in [Spanish](#))

[Extended FAQ information and document](#)

[Temporary change in disinfectant treatment process infographic](#)

[Ways to reduce taste and odor infographic](#) (also available in [Spanish](#))

[Questions about water and water testing infographic](#) (also available in [Spanish](#))

[Water hardness fact sheet](#)

[Fluoridation FAQ](#)

[Medical facts about water treatment and disinfection](#)

[Journey of Water from lake to tap 4-page overview](#)

[Getting water to you infographic](#)

[Water Treatment Process infographic](#)