2017 Consumers' Annual Report on Water Quality

Regional Water Authority

Dear Valued Consumer

I am very pleased to present your Annual Report on Water Quality, which summarizes information on the quality of the water delivered to you in 2017.

There are few things as important to our public health as the availability of reliable, high-quality drinking water, and at the Regional Water Authority (RWA), we take our responsibility to distribute that water to your tap very seriously. Planning for high-quality drinking water started over a century ago when our founder, Eli Whitney II, began construction of a dam that backed up the Mill River and formed the Lake Whitney reservoir. For more than 150 years, the RWA has played an integral behind-the-scenes role in meeting the ever-growing demands of our region, supporting public health, quality of life and economic growth.

Today, the RWA provides high-quality drinking water to nearly 430,000 consumers in 15 towns in south central Connecticut, and Whitney's vision — to make people's lives better — continues in every aspect of the RWA. As a conscious company, everything we do goes back to our higher purpose, which is to make life better for people by delivering water for life.

In the pages that follow, you'll learn how the RWA works to make sure the water we deliver meets or is better than all federal and state regulations. You'll also learn where your water comes from and about the multi-barrier approach to ensuring water quality. This approach focuses on watershed and aquifer management to protect the quality of our drinking water sources, treatment of the water prior to consumption, maintenance of the distribution system that delivers the water to the tap and monitoring the quality of the water to ensure compliance.

Please take this opportunity to discover more about your drinking water and our commitment to provide you with the highest-quality product at the lowest possible price and to protect your drinking water sources for generations to come. This report will be added to our website, rwater.com. There, you can also learn about our recreation and education programs, our water-related products and services, and other information of interest.

Our record of excellence, trust, innovation and the hard work of our 270 skilled employees are a proud reflection of our company and our higher purpose.

Sincerely,

Larry L. Bingaman
President & Chief Executive Officer

South Central Connecticut Regional Water Authority
90 Sargent Drive, New Haven, CT 06511-5966

Telephone: **203.562.4020**
On the Internet: **rwater.com**
General E-mail: **ask.info@rwater.com**

A five-member Authority and a 21-member Representative Policy Board oversee our operations. The Authority meets on the third Thursday of each month at 12:30 p.m., and the Representative Policy Board normally meets on the third Thursday at 6:30 p.m. at our headquarters at 90 Sargent Drive in New Haven. Please call to confirm meeting time.

This report contains important information about your drinking water. Please translate it, or speak with someone who can and who understands it.

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Drinking Water Quality

This 2017 Consumers' Annual Report on Water Quality provides you with a summary of the region's water quality. In 2017, the RWA collected more than 10,000 water samples and conducted over 110,000 tests to ensure high-quality water reaches residents and businesses in Greater New Haven. The 2017 test results presented in this report demonstrate that your drinking water meets or is better than the water quality standards established by the U.S. Environmental Protection Agency (EPA) and the Connecticut Department of Public Health (CTDPH).

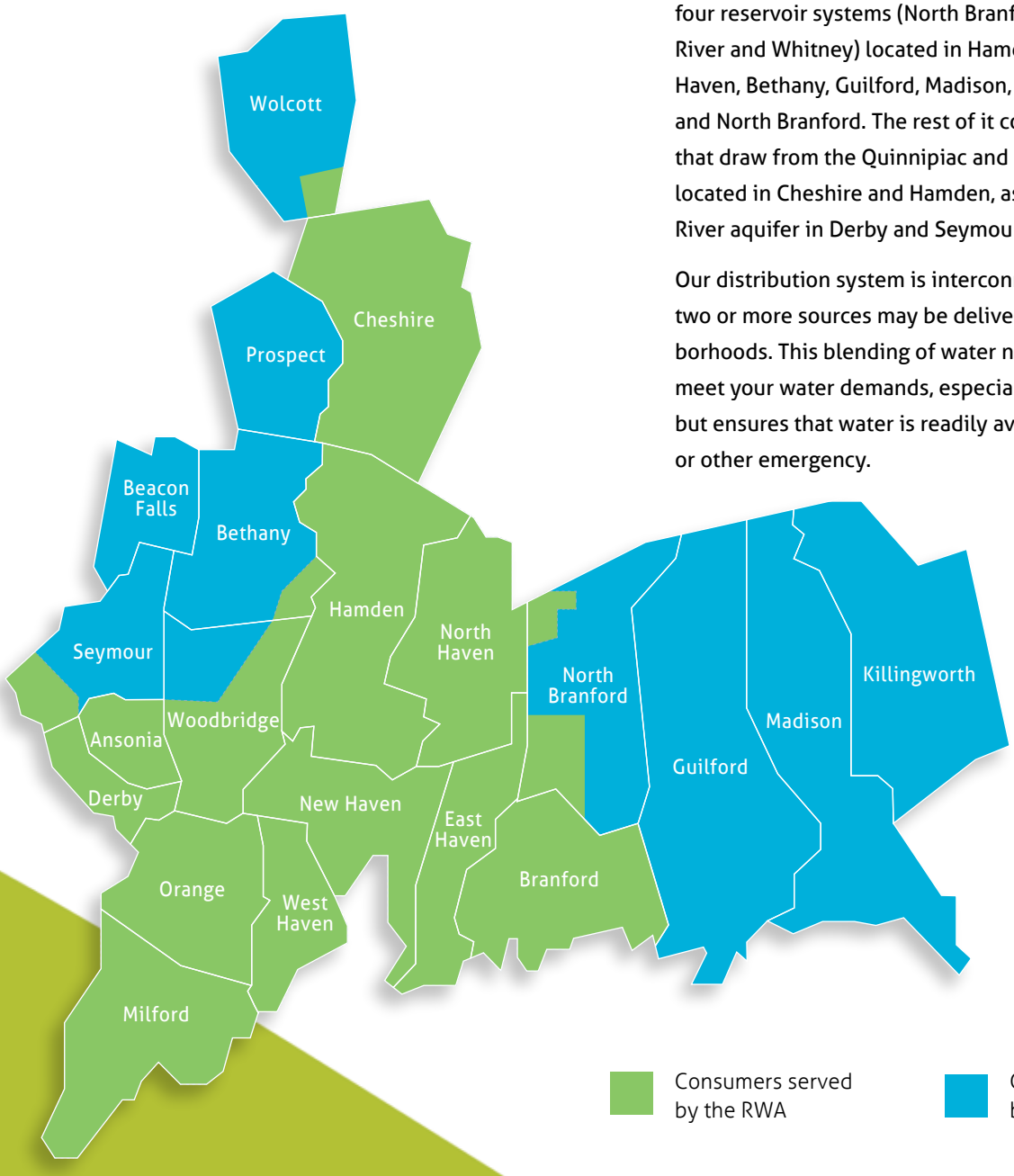
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1.800.426.4791 or by visiting epa.gov/safewater.

Drinking Water Sources

Your drinking water comes from 10 reservoirs and three aquifers. The reservoirs are filled by rivers. Aquifers are natural sand, gravel and bedrock areas below the surface of the ground that are saturated with water, typically from rainfall.

Over 80 percent of the tap water in our district comes from four reservoir systems (North Branford, Saltonstall, West River and Whitney) located in Hamden, Woodbridge, East Haven, Bethany, Guilford, Madison, Killingworth, Branford and North Branford. The rest of it comes from wellfields that draw from the Quinnipiac and Mill River aquifers located in Cheshire and Hamden, as well as the Housatonic River aquifer in Derby and Seymour.

Our distribution system is interconnected. Water from two or more sources may be delivered to some neighborhoods. This blending of water not only permits us to meet your water demands, especially during a heat wave, but ensures that water is readily available to fight a fire or other emergency.



What We Do to Safeguard Your Drinking Water

1 Protect

Our source water protection program focuses on pollution prevention and watershed management. We protect over 27,000 acres of land in the region and manage it carefully. We monitor the quality of the water and all activity on the surrounding land, watching for potential contamination of the reservoirs and aquifers that are the sources of your tap water.

2 Treat

Aquifer water is naturally filtered underground. Reservoir water is filtered at our filtration plants. We use chlorine to kill microbes that might cause illness, and we add phosphate to minimize corrosion of pipes and fluoride to prevent dental cavities, as required by CTDPH regulations.

3 Distribute

The treated or finished water is delivered to you through a 1,700-mile-long network of pipes, pumping stations and storage tanks. We carefully maintain this extensive network to ensure that high-quality water is available whenever you turn on your tap.

4 Monitor

Our water testing is stringent. In 2017, we performed more than 110,000 tests on over 10,000 water samples taken from numerous locations throughout our water distribution system, within our water treatment plants and in the reservoirs and aquifers where the water is stored prior to treatment. These samples are brought back to our state- and nationally-certified laboratory for microbiological testing as well as organic and inorganic chemical testing. The laboratory uses analytical devices as simple as pH meters or as complex as gas chromatographs and mass spectrometers. The results of these tests are compared to more than 175 state and federal standards and are reported to the CTDPH on a monthly, quarterly and annual basis, ensuring that only the highest-quality drinking water is provided to you.

Source Water Assessment Information

A Source Water Assessment lists possible contaminants that might affect the quality of your water sources. The CTDPH Drinking Water Division completed an assessment of the RWA's sources of water. You can find the most recent assessment of the RWA's water on the CTDPH website: dir.ct.gov/dph/Water/SWAP/Community/CT0930011.pdf.

Additional Information

In order to ensure that tap water is safe to drink, the EPA and the CTDPH set regulations that limit the amount of certain contaminants in water provided by public water systems. For more information, visit the CTDPH website: ct.gov/dph.

Sources of drinking water (both tap and bottled) include rivers, lakes, streams, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water due to these activities include the following:

Inorganic Compounds

Inorganic compounds, such as salt and metals, can be naturally occurring or result from urban storm-water runoff, industrial or domestic wastewater discharges or farming.

Pesticides and Herbicides

Pesticides and herbicides may come from a variety of sources, such as agriculture, urban stormwater runoff and residential uses.

Organic Chemical Compounds

Organic chemical compounds, including synthetic and volatile organic chemicals that are by-products of industrial processes, can come from gas stations, urban stormwater runoff or septic systems. Some of these compounds, such as trihalomethanes and haloacetic acids, are disinfection by-products that result from the use of chlorine as a disinfectant in water treatment, which reacts with naturally occurring materials in water, such as leaves.

Radioactive Contaminants

Radioactive contaminants can be naturally occurring or may be the result of oil and gas production.

Radon

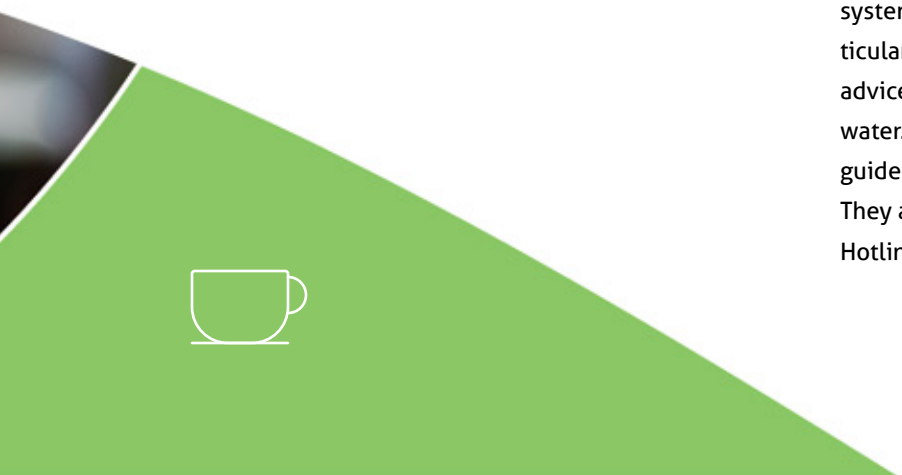
Radon is a radioactive gas that you cannot see, taste or smell. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. The gas can accumulate to high levels in all types of homes. Radon can also get into indoor air when released from tap water while showering, washing dishes and doing other household activities. In most cases, however, radon entering the home through tap water is a small source of all the radon in indoor air. Radon is a carcinogen. Breathing air containing radon over extended periods can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air. Testing is inexpensive and easy. If the level of radon in your air is 4 picocuries per liter (pCi/L) or higher, you need to take steps to reduce it. For additional information, call CTDPH at 860.509.7333 or the EPA's Radon Hotline at 1.800.SOS.RADON.

Microbial Contaminants

Microbial contaminants, such as bacteria, viruses and cryptosporidium, may come from sewage treatment plants, septic systems, agricultural livestock operations, wildlife or natural sources.

At-Risk Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk of infections. These people should seek advice from their health care providers about drinking water. The EPA and Centers for Disease Control offer guidelines on ways to lessen the risk from contaminants. They are available by calling the EPA's Safe Drinking Water Hotline at 1.800.426.4791.



Important Health Facts

Lead and Copper Testing

The EPA developed the Lead and Copper Rule (LCR) to protect public health by minimizing lead and copper levels in drinking water. The most common source of lead and copper in drinking water is corrosion of plumbing materials. Plumbing materials that can be made with lead and copper include pipes, solder, fixtures and faucets. The LCR established an action level of 15 parts per billion (ppb) for lead and 1.3 parts per million (ppm) for copper, based on the 90th percentile level of tap water samples. This means that no more than 10 percent of the samples can be above either action level. The Maximum Contaminant Level Goal (MCLG) for copper is 1.3 ppm; the MCLG for lead is zero. The test frequency for lead and copper is determined by state and federal regulatory agencies with sampling conducted at the consumer's tap. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The RWA is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components that might be present in homes and businesses. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you should consider having your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the EPA's Safe Drinking Water Hotline at 1.800.426.4791 and epa.gov/safewater/lead.

The major sources of copper in drinking water are the corrosion of household plumbing systems and the erosion of natural deposits. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor. To minimize exposure to copper, please follow the previous flushing instructions for lead.

Sodium

Sodium is an essential nutrient in your diet. It helps maintain the right balance of fluids in your body and transmit nerve impulses to your muscles. Sodium in drinking water normally presents no health risks, as about 99 percent of your daily salt intake is from food and only about one percent is from water. However, elevated sodium in water may be considered a health concern for those on a restricted-salt diet. If you have been placed on such a diet, please inform your physician that our water can contain as much as 31 milligrams per liter of sodium. For comparison, whole milk has a sodium content of 530 milligrams per liter.

Results of Cryptosporidium Monitoring

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes cryptosporidium, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monitoring in 2017 indicated that no organisms were detected in either the untreated source water or the finished treated water ready for consumption.

RWA Drinking Water Analysis Data for 2017

The tables on this page and page 8 contain a summary of our water quality monitoring and test results for the treated water that originated from our reservoirs and aquifers during the 12-month period of 2017. Potential sources of contaminants are listed on page 10.

Regulated Contaminants Found in Reservoirs and Aquifers

Substance	MCL	MCLG	Range Detected	Average Level	Met Regulatory Standards
Barium	2 ppm	2 ppm	0.007–0.289	0.075 ppm	Yes
Chloride	250 ppm	N/A	16–84	36 ppm	Yes
Fluoride	4 ppm	4 ppm	ND–1.4	0.75 ppm	Yes
Microbial Pathogens[a]	TT = 100% of 4-log removal based on chlorine residual	N/A		100%	Yes
Nitrate (as nitrogen)	10 ppm	10 ppm	0.008–2.96	0.794 ppm	Yes
Total Haloacetic Acids (THAA)	60 ppb Average	N/A	6–62[b]	41 ppb	Yes
Total Trihalomethanes (TTHM)	80 ppb Average	N/A	14–93[b]	50 ppb	Yes
Turbidity (aquifers)	TT = 5 NTU	N/A	ND–0.34	0.06 NTU	Yes

Substance	MCL	MCLG	Range Detected	Minimum Removal Ratio	Met Regulatory Standards
Total Organic Carbon (TOC)	TT = Removal Ratio ≥1[c]	N/A	1.00–2.16	1.34	Yes

Substance	MCL	MCLG	Highest Level Detected	Met Regulatory Standards
Total Coliform Bacteria	Presence of coliform bacteria not to exceed 5.00% of monthly samples	0%	0.5% (October 2017)	Yes
Turbidity (reservoirs)	TT = 95% of samples ≤ 0.3 NTU[d]	N/A	0.23 NTU	Yes

Substance	MRDL	MRDLG	Range Detected	Average Level	Met Regulatory Standards
Chlorine	4 ppm	4 ppm	0.5–2.4	1.7 ppm	Yes

Substance	MCL	MCLG	90th Percentile[e]	Met Regulatory Standards
Lead Analyzed 2017[f]	AL = 15 ppb[g]	0 ppb	2 ppb No. of sites above AL = 0	Yes
Copper Analyzed 2017[f]	AL = 1.3 ppm[g]	1.3 ppm	0.34 ppm No. of sites above AL = 0	Yes

Notes

(a) Treatment that reliably achieves at least 99.99% (4-log) treatment of viruses using inactivation

(b) Individual sample and individual location

(c) Ratio is a value derived from monthly TOC% removal calculation

(d) 95% of samples within a given month

(e) Calculated value derived from the analysis performed on high-priority customers

(f) Test frequency as determined by state and federal regulatory agencies

(g) Action level is based on the calculated 90th percentile

(h) See sodium notice on page 6

Unregulated Contaminants Found in Reservoirs and Aquifers

Substance	MCL	Range Detected	Average Level	Met Regulatory Standards
Bromodichloromethane	N/A	4–15	7 ppb	N/A
Chloroform	N/A	7–82	41 ppb	N/A
Dibromoacetic Acid	N/A	ND	ND	N/A
Dibromochloromethane	N/A	ND–12	1 ppb	N/A
Dichloroacetic Acid	N/A	1–25	14 ppb	N/A
Monochloroacetic Acid	N/A	ND–9	4 ppb	N/A
Trichloroacetic Acid	N/A	5–32	22 ppb	N/A

Substance	Notification Level	Range Detected	Average Level	Met Regulatory Standards
Radon (aquifers only)	N/A	ND–2120	652 pCi/l	N/A
Sodium	28 ppm	12–31[h]	21 ppm	N/A

Unregulated Contaminants for the Unregulated Contaminant Monitoring Rule List 3

During 2014, the RWA participated in the third phase of the Unregulated Contaminant Monitoring Rule (UCMR3). Unregulated contaminants are those for which the EPA has not established drinking water standards. Monitoring assists the EPA in determining the occurrence of these compounds and whether or not regulation is warranted. Detections are summarized in the table below. For general information on UCMR3, visit epa.gov/dwucmr or contact the EPA's Safe Drinking Water Hotline at 1.800.426.4791.

Parameter	MCL	Range Detected	Average Level
1,4 Dioxane Analyzed 2014	N/A	ND–11	1.57 ppb
Chlorate Analyzed 2014	N/A	ND–1990	252 ppb
Chromium Analyzed 2014	N/A	ND–1.10	0.38 ppb
Hexavalent Chromium Analyzed 2014	N/A	ND–0.78	0.25 ppb
Strontium Analyzed 2014	N/A	20.5–123.0	70.1 ppb
Vanadium Analyzed 2014	N/A	ND–1.58	0.67 ppb

Notice of Violation – Monitoring and Reporting

We are required to report the results of our monitoring of your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. The RWA did not collect one sample from the Lake Whitney Water Treatment Plant to test for total organic carbon (TOC) and alkalinity, as required, at the end of March 2017. To correct the issue, we have improved internal communication and have collected the required samples, as described in the tables in this report. The current monitoring of the samples demonstrates we are meeting drinking water standards.

Technology, Definitions and Water Quality Measurement Units

AL Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

BDL Below Detection Level
Calculated value resulting in below detection level.

MCL Maximum Contaminant Level
The highest level of a contaminant allowed in drinking water. Maximum Contaminant Levels are set as close to the Maximum Contaminant Level Goal as feasible, using the best available treatment technology.

MCLG Maximum Contaminant Level Goal
The level of a contaminant in drinking water below which there is not a known or expected risk to health. Maximum Contaminant Level Goals allow for a margin of safety.

MRDL Maximum Residual Disinfectant Level
The level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without adverse health effects.

MRDLG Maximum Residual Disinfectant Level Goal
A non-enforceable health goal. It does not reflect the benefits of adding the chemical for the control of waterborne microbial contaminants.

ug/L Micrograms per Liter
A unit of concentration for dissolved substances based on their weights.

N/A Not Applicable
Not applicable or required.

ND Not Detected
Not detected.

NTU Nephelometric Turbidity Units
A measure of clarity of water. Turbidity more than 5 NTU is just barely noticeable to the average person.

ppb Parts per Billion
A measure of the concentration of a substance roughly equivalent to half a teaspoon of water in one Olympic-size swimming pool.

ppm Parts per Million
A measure of the concentration of a substance roughly equivalent to one half of a dissolved tablet of aspirin in a full 50-gallon bathtub of water.

pCi/L Picocuries per Liter
A measure of radioactivity in water.

TT Treatment Technique
A required process intended to reduce the level of contaminants in drinking water.

Potential Sources of Contaminants

1,4 Dioxane Used as a solvent or solvent stabilizer in the manufacture and processing of paper, cotton, textile products, automotive coolant, cosmetics and shampoos.

Barium Discharge of drilling waste; discharge from metal refineries; erosion of natural deposits.

Bromodichloromethane By-product of drinking water chlorination.

Chlorate By-product of the drinking water disinfection process; a number of compounds can react to release chlorate ions in water, including some in herbicides, fireworks and other explosives.

Chloride Naturally present in the environment.

Chlorine Water additive used to control microbes.

Chloroform By-product of drinking water chlorination.

Chromium Discharge from steel and pulp mills; erosion of natural deposits.

Copper Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.

Dibromoacetic Acid By-product of drinking water chlorination.

Dibromochloromethane By-product of drinking water chlorination.

Dichloroacetic Acid By-product of drinking water chlorination.

Fluoride Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.

Hexavalent Chromium Naturally occurring element, used in making steel and other alloys; chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning and wood preservation.

Lead Corrosion of household plumbing systems; erosion of natural deposits.

Microbial Pathogens Naturally present in the environment.

Monochloroacetic Acid By-product of drinking water chlorination.

Nitrate (as Nitrogen) Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits.

Radon Naturally present in the environment.

Sodium Naturally present in the environment; sources such as road salt storage and application, industrial waste, sewage and fertilizers are usually the cause of elevated levels in drinking water supplies.

Strontium Erosion of natural deposits.

Total Coliform Bacteria Naturally present in the environment.

Total Haloacetic Acids (THAA) By-product of drinking water chlorination.

Total Organic Carbon (TOC) Naturally present in the environment.

Total Trihalomethanes (TTHM) By-product of drinking water chlorination.

Trichloroacetic Acid By-product of drinking water chlorination.

Turbidity (aquifers) Soil runoff.

Turbidity (reservoirs) Soil runoff.

Vanadium Naturally occurring metal found in many different minerals and in fossil fuel deposits; the primary industrial use of vanadium is in the strengthening of steel.

Wise Water Use

Water is a precious resource. To ensure we have sufficient water to meet the needs of all our consumers and put less stress on local water sources and the environment, we encourage consumers to use water wisely. Here are some simple things you can do:

Check for any dripping faucets or running toilets. A leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons of water per year. The average leaky toilet can waste about 200 gallons of water per day. That's over 6,000 gallons of water a month.

Shower to save water. A bath typically uses up to 70 gallons of water, whereas a five-minute shower will use only 10–25 gallons depending on the efficiency of your showerhead.

Turn off the faucet while brushing your teeth to save as much as four gallons of water. If you brush your teeth in the morning and at night, that adds up to saving 200 gallons of water a month. The same is true when you wash your hands or shave.

Scrape your dirty dishes and then put them into the dishwasher. The average dishwasher uses six gallons of water per cycle; more efficient dishwashers use four gallons per cycle.

Wash only full loads of clothes. Older, top-loading machines use 40 gallons of water to wash a full load. Today's newer standard models use 27 gallons, and more efficient Energy Star washers use 14 gallons per wash.

Avoid evaporation. Water your lawn or garden in the early morning or later in the evening; if you have a swimming pool, cover it and cut water loss through evaporation by 90 percent.

Don't use a hose to spray away debris. Clean your sidewalk or driveway with a broom instead to save up to 80 gallons of water.

Apply mulch around flowers, shrubs, vegetables and trees. This will help to reduce evaporation, promote plant growth and control weeds.

EPA WaterSense PARTNER

For more tips on how to use water wisely, visit rwater.com or epa.gov/WaterSense.

Regional Water Authority
Tapping the Possibilities™

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Regional Water Authority

We Conducted

110,000+ Tests

On Your Drinking Water

Here Are The Results