

Urban Area

2021 Annual Drinking Water Report

Includes Testing for 2020



168 Spotnap Road
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Phone: (434)977-4511
www.serviceauthority.org

Dedicated to Delivering Clean Water

Dear Customer,

2020 was a difficult year for all of us. Our lives were turned upside-down in ways we never could have imagined, and many of us experienced tragedy we never expected. Throughout the pandemic, we regained an appreciation of the simpler things in life we had to forego. Seeing our loved ones whenever we wanted. Moving through our day without hesitation. Enjoying an evening out. Watching our children or pets play with others.

As we spent more time at home than we ever expected, we relied on the services that came to our doors. And our taps. Thankfully, thanks to the people of the Albemarle County Service Authority (ACSA), our customers did not have to worry about the quality of the water that filled their glasses or made their meals. During the pandemic's challenges, their hard work ensured our customers were being delivered safe, dependable water by conducting thousands of water quality tests to assure that it is always of the highest quality. The drinking water again met or exceeded all regulatory requirements in 2020.

The ACSA and the Rivanna Water and Sewer Authority (RWSA), in partnership with the Virginia Department of Health (VDH), work cooperatively to ensure our customers receive a safe and reliable supply of drinking water. The RWSA collects, stores and treats the water, while the ACSA purchases the treated water and delivers it to our customers through our distribution system.

The ACSA is committed to providing you, the customer, with this information since informed customers are indeed our best allies. We encourage you to contact us and tell us what you think of this report; your suggestions are always welcomed. If you wish to receive a "hard-copy" of the report, please contact Tim Brown at 977-4511, Ext. 119, or at tbrown@serviceauthority.org.

Thank you,



Gary B. O'Connell
Executive Director
Albemarle County Service Authority

Our Customer Service representatives are available Monday-Friday from 8am to 5pm to assist you in person, via email, or by phone. Information is also available on our website, www.serviceauthority.org.



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Important Information about Your Water

ACSA Board of Directors

Clarence Roberts, Chair - Rivanna District
Jennifer Sulzberger, Vice Chair - Samuel Miller District
John Parcels - White Hall District
Charles Tolbert - Jack Jouett District
Nathan Moore - Rio District
Richard Armstrong - Scottsville District

The ACSA Board of Directors holds meetings on the third Thursday of each month at 9am at 168 Spotnap Road. Call (434) 977-4511 or visit www.serviceauthority.org for more information.

The Rivanna Water & Sewer Authority (RWSA) Board of Directors holds meetings on the fourth Tuesday of each month at 2pm at 695 Moore's Creek Lane. Call (434) 977-2970 or visit www.rivanna.org for more information.

Your Water Supply & Treatment

The RWSA operates three water treatment plants (WTP) to provide water to the City of Charlottesville and the urban "ring" served by the ACSA. The South Rivanna WTP is sourced by the South Rivanna Reservoir; the Observatory WTP is sourced the Ragged Mountain and Sugar Hollow Reservoirs; and the North Rivanna WTP is sourced by the North Fork Rivanna River.

The Source Water Assessment of the South Rivanna Reservoir watershed was updated in 2020 by the Virginia Department of Health (VDH). VDH determined the reservoir's "relative susceptibility to contamination" to be "high" due to its surface water being exposed to an inconsistent array of contaminants at varying concentrations. This assessment is due to changing hydrologic, hydraulic, and atmospheric conditions with potential sources of contamination in one of the zones of the reservoir's assessment area.

All water sources are surface water supplies, replenished by precipitation, stream flow, overland flow, and groundwater flow. All supplies have a low mineral content, are low in hardness or scale ("soft"), and there is little of the iron or manganese commonly found in the area's groundwater. The treated water doesn't have any iron or manganese.

Each plant employs both physical and chemical treatment processes before releasing water into the distribution system. Sodium hypochlorite is used at all three plants to disinfect the treated water. Fluoride is added at each plant to promote good dental health. The origin of the water provided to your tap may vary from time to time depending on demand, the level of storage in the system, and your location.

Significant upgrades to all three plants were completed in 2018 related to the Stage 2 Disinfection Byproducts Rule. An advanced treatment process that employs granular activated carbon (GAC) was installed to result in higher quality water. In particular, the concentration of disinfection byproducts (TTHMs and HAAs; see discussion of contaminants) has been significantly reduced. In addition to lowering these chemical compounds, GAC serves as a barrier to other potential contaminants and improves certain taste and odor issues.

Water Treatment for Corrosion Control

It is standard practice that a phosphate chemical be added to drinking water supplies during treatment in order to reduce corrosion of the metal pipes in the distribution system and in customer plumbing. The chemical forms a protective layer on the inside of the pipes, reducing corrosion and the possibility of mainly lead and copper from entering the water.

Important Information about Your Water

Water Treatment for Corrosion Control (continued)

For more than 30 years, the RWSA has used a polyphosphate product for corrosion control, and it has been very effective in keeping lead and copper out of customer water supplies. The RWSA evaluated and implemented a new, blended, orthophosphate product to optimize distribution system lead and copper corrosion control in February 2021. All testing has shown the change to be effective, and testing will continue through 2022.

Advanced Treatment Using Granular Activated Carbon (GAC)

Granular activated carbon (GAC) is very effective in improving water quality in distribution systems. It was added to all of our treatment processes to aid in the additional removal of organics that, when combined with chlorine, create disinfection byproducts (DBPs) regulated by the EPA. GAC also provides improved water taste and odor, and it is proven to be highly effective at removing a series of man-made and naturally occurring contaminants that are being found in a growing number of water supplies across the county. While testing has shown our service areas are not impacted by these contaminants, GAC provides an added level of treatment for the protection of our drinking water.

Installation of the GAC systems was completed in 2018 and the reduction of DBPs has been dramatic. We are extremely proud of the results that have been achieved because they demonstrate how community support and investment in our water treatment will result in excellent drinking water quality now and for years to come.

Water Quality Standards

The information in this report has been collected and reported in accordance with the drinking water standards established by the USEPA and the VDH. The RWSA conducts extensive testing of the source water (Totier Creek) and the treated water before it ever leaves the plant, as well as testing weekly, monthly and quarterly samples within the distribution system.

In addition to the data contained in this report, other testing includes such parameters as the “heavy” metals, volatile organic compounds, semi-volatile organic compounds, herbicides, and pesticides of the treated water. They are not listed here since none of these parameters was detected. More specific information can be obtained by contacting Tim Brown at 977-4511, ext. 119, or at tbrown@serviceauthority.org.

As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases radioactive material, as well as substances resulting from the presence of animals and human activities. In other words, all surface water supplies are exposed to a wide array of “contaminants” at varying concentrations. The presence of these contaminants, however, does not necessarily indicate that water poses a health risk, and even bottled water may reasonably be expected to contain at least minimal amounts of some contaminants.

More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline (800-426-4791) or by visiting their website (www.epa.gov/safewater). See also the discussion of *Cryptosporidium* contained in this report.

Internal Issues of Mold

The most common water-related complaint we have received from our customers over the years is the occasional appearance of a black growth on toilets, and in fixtures like faucets and shower heads. This is a harmless form of mold; the water is completely safe to drink. The mold is not coming into your home through our water pipes. Instead, the mold is the result of airborne spores and there not being enough chlorine in the water to prevent mold growth. The spores come from hardwood forests, construction sites, and mulch piles. In particular, we have seen a very clear link between mold and mulch supplies for several years.

Testing has shown the mold to be very common types. More information, including tips on control, can be obtained by visiting our website at www.serviceauthority.org/waterqualitysupply/water-quality.

Important Information about Your Water

Drinking Water In the News

Per- and Polyfluoroalkyl Substances (PFAS)

You may have heard about a class of man-made compounds called per- and polyfluoroalkyl substances; they are known as PFAS for short. PFAS make thousands of the products we use every day stain and/or water resistant. They coat your clothing, carpets, furniture, and cookware. They're also found in food wrappers, pizza boxes, and even dental floss.

The ACSA uses advanced water treatment in the form of granular activated carbon (GAC); it has been proven to be highly effective at removing many PFAS compounds. Because the EPA has not designated maximum contaminant levels (MCL) for PFAS, the ACSA is not required to monitor these compounds. However, because they are environmentally persistent and do not break down like other substances, the ACSA has been working with the RWSA to monitor these compounds in your drinking water.

Testing was conducted for 18 PFAS compounds in the raw (untreated) and treated water of five plants in the summer of 2020. The samples were sent to an independent laboratory for testing. Only a trace of one compound was detected in the raw and treated water of one plant, at less than 5 ppt (parts per trillion).

Revised Lead and Copper Rule

The Environmental Protection Agency's (EPA) Lead and Copper Rule, first established in 1991, has recently undergone its most extensive revision in 30 years, the final details of which are expected to be confirmed later in 2021. Among the changes expected to be in the revised Rule are:

- A requirement for water utilities to conduct "location-based" inventories of all publicly and privately-owned lines to identify if they are made of, or likely to be made of, lead. The lines include all of the plumbing materials used to distribute drinking water from the street to the house or business;
- A plan for removal of any lead service lines that are identified;
- A review of the corrosion control process at the treatment plants;
- Testing of all schools and licensed childcare facilities for lead within a five-year period; and
- Increased transparency, public education, and outreach.

In addition, the revised Rule may include a new "Trigger Level" and/or a more stringent Action Level for lead, at which water utilities must conduct public notifications, investigate their treatment plant processes, adjust their processes, if necessary, and perform additional testing.

The ACSA will inform you of the final version of the Lead and Copper Rule when it is announced and detail how the ACSA is working under the Rule in our 2022 Water Quality Reports. Until that time, the ACSA and RWSA want you to know we have been proactive about lead and copper in several ways. We have started service line material identification and, to date, we have not found any lead service lines in our systems. Meter setters with a lead content were removed years ago. As mentioned earlier, the RWSA recently conducted detailed corrosion-control studies of all treatment plants and implemented slight changes in the chemical used to inhibit corrosion. These changes have been found to be effective.

Above all else, the ACSA and the RWSA have testing histories of nearly 30 years of excellent lead and copper results in our customers' homes and businesses. Since 2016, over 96% of all samples collected (202 of 210) have shown lead to be undetected (less than 2 parts per billion or ppb). Of the eight samples with detectable lead, six showed lead at less than 4 ppb.

We are proud to deliver such high-quality water to you.

Important Information about Your Water

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface waters throughout the U.S. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection characterized by nausea, diarrhea, and abdominal cramps. Cryptosporidium may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people are at risk of developing a potentially life-threatening illness.

Although filtration removes the pathogen, the most commonly used filtration methods cannot guarantee 100% removal. The RWSA makes every effort to optimize the filtration process at all of the WTPs to ensure the greatest degree of Cryptosporidium removal. Based on the results of recent studies, our water sources have been placed in the lowest risk category for exposure to Cryptosporidium.

Fluoride

The naturally-occurring fluoride content of our source waters (reservoirs and streams) is quite low. Therefore, fluoride is added to your water at the treatment plants to promote good dental health. Fluoridation of drinking water was first introduced in the U.S. in the 1940s, and the Centers for Disease Control and Prevention named it one of the ten great public health achievements of the 20th century.

In 2011, the U.S. Department of Health and Human Services (DHHS), jointly with the U.S. Environmental Protection Agency (EPA), recommended that the level of fluoride added to drinking water be reduced from a range of 0.7-1.2 ppm to 0.7 ppm. The main reason for this proposed action is that Americans have access to more sources of fluoride than they did decades ago. In addition to the fluoride added to many public water supplies, it is found in toothpastes and mouth rinses, and is routinely applied to children's teeth by dental professionals.

DHHS officially decreased the recommended level of fluoride in drinking water to 0.7 ppm in 2015. The range of fluoride added to your water in 2020 was 0.29-0.95 ppm.

Lead in Drinking Water

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 internal plumbing. RWSA and the ACSA are responsible for providing high-quality drinking water; it is non-corrosive, has a corrosion inhibitor added to the water to coat the pipes, and is delivered to you in pipes that are free of lead.

However, we cannot control the variety of materials used in the plumbing components of houses 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 drinking or cooking. If you are concerned about lead in your water you may wish to have your water tested. The periodic lead and copper testing at select, high-risk households last occurred in the summer of 2019, and will take place in the summer of 2021. (See the data chart.)

A trace amount of lead was found in only one of the 30 samples in 2019. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at www.epa.gov/safewater/lead.

Important Information about Your Water

2020 Water Quality Test Results

Primary Standards - Potential Health Risk	MCLG	MCL	ACSA Water Result	# Samples > AL	Range of Detections	Violation?	Typical Source of Contaminant
MICROBIOLOGICAL ORGANISMS; RELATED MEASUREMENTS							
Total Coliform Bacteria (1)	0	Presence in 5% of samples per month	1 per mth. (Feb., Mar., June, Aug., Oct., Dec.) (2)	N/A	0-1 per month	No (2)	Naturally present in the environment
Fecal Coliform Bacteria (1)	0	See footnote (3)	1 (Oct.) (4)	N/A	0-1 per month	No (4)	Human and animal fecal waste
Turbidity (max. single value)	N/A	1 (5)	0.21 NTU	N/A	N/A	No	Soil runoff
Turbidity (% of monthly samples below 0.3 NTU)	N/A	At least 95% (5)	100%	N/A	100%	No	Soil runoff
RADIOACTIVE COMPOUNDS							
Combined Radium (6)	0 pCi/l	5 pCi/l	0.7 pCi/l	N/A	<0.5-0.7 pCi/l	No	Erosion of natural deposits
Gross Alpha (6)	0 pCi/l	15 pCi/l	<0.38 pCi/l	N/A	<0.3-<0.38 pCi/l	No	Decay of natural deposits
Gross Beta (6,7)	0 pCi/l	50 pCi/l	1.7 pCi/l	N/A	1.1-1.7 pCi/l	No	Erosion of natural deposits
INORGANIC COMPOUNDS							
Lead (8)	0 ppb	15 ppb (AL)	<2.00 ppb (9)	0	<2.00-3.09 ppb	No	Corrosion of household plumbing
Copper (8)	1.3 ppm	1.3 ppm (AL)	0.065 ppm (9)	0	<0.020-0.108	No	Corrosion of household plumbing; erosion of natural deposits
Barium	2 ppm	2 ppm	0.016 ppm (9)	N/A	<0.010-0.016	No	Erosion of natural deposits; drilling waste discharges
Fluoride	4 ppm	4 ppm	0.76 ppm	N/A	0.29-0.95 ppm	No	Water additive that promotes strong teeth
Nitrates	10 ppm	10 ppm	0.40 ppm	N/A	<0.05-0.40 ppm	No	Fertilizer runoff
DISINFECTION & DISINFECTION BYPRODUCT CONTAMINANTS							
Free Residual Chlorine	MRDL=4 ppm	MRDLG=4 ppm	1.09 ppm (10)	N/A	0.24-1.91 ppm	No	Water additive to control microbes (disinfectant)
Total Trihalomethanes (TTHMs)	0	80 ppb	38 ppb (11)	N/A	8.9-58 ppb	No	Disinfection byproduct
Haloacetic Acids (HAAs)	0	60 ppb	20 ppb (11)	N/A	6.1-30 ppb	No	Disinfection byproduct

What if I Am Immuno-compromised?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as those with cancer undergoing chemotherapy; people who have undergone organ transplants; persons with HIV/AIDS or other immune system disorders; and some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA and CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from EPA's Safe Drinking Water Hotline (800-426-4791) or by visiting their website - www.epa.gov/safewater.

Important Information about Your Water

2020 Water Quality Test Results (continued)

Secondary Standards/Aesthetic Factors	MCLG	MCL	ACSA Water Result	# Samples > AL	Range of Detections	Violation?	Typical Source of Contaminant
Chloride	N/A	250 ppm	8.0-15.1 ppm	N/A	8.0-15.1 ppm	No	Runoff/leaching of natural deposits
Iron	N/A	0.3 ppm	<0.05 ppm	N/A	N/A	No	Runoff/leaching of natural deposits
Manganese	N/A	0.05 ppm	<0.01 ppm	N/A	N/A	No	Runoff/leaching of natural deposits
pH	N/A	6.5-8.5 S.U.	7.4-7.6 (mth. avg.)	N/A	7.4-7.6 (mth. avg.)	No	Runoff/leaching of natural deposits
Sulfate	N/A	250 ppm	<5.0-19.2 ppm	N/A	<5.0-19.2 ppm	No	Runoff/leaching of natural deposits
Total Dissolved Solids	N/A	500 ppm	56-87 ppm	N/A	56-87 ppm	No	Runoff/leaching of natural deposits
OTHER PARAMETERS OF INTEREST							
Alkalinity	N/A	N/A	18-53 ppm (mth avg.)	N/A	18-53 ppm	N/A	Runoff/leaching of limestone minerals
Conductivity	N/A	N/A	102-141 micromhos/cm	N/A	102-141 micromhos/cm	N/A	Runoff/leaching of natural deposits
Hardness	N/A	N/A	16-36 ppm	N/A	16-36 ppm	N/A	Runoff/leaching of limestone minerals
Sodium	N/A	N/A	6.54-23.6 ppm	N/A	6.54-23.6 ppm	N/A	Runoff/leaching of natural deposits

(1) Unit of measurement for total and fecal coliform bacteria is the presence or absence of bacteria in a 100 ml sample.

(2) Of the 960 routine samples collected in 2020, six (6) samples indicated the presence of total coliform bacteria. One (1) of these samples indicated the presence of fecal coliform bacteria.

(3) Fecal coliform MCL: A routine sample and a repeat sample are total coliform positive, and at least one is also fecal coliform positive.

(4) No repeat sample indicated a positive result for fecal coliform bacteria or total coliform bacteria.

(5) The MCL for turbidity is for no single measurement to exceed 1 NTU, and for 95% of all measurements to be below 0.3 NTU.

(6) Last sampled in 2017. To be sampled again in 2023.

(7) The EPA considers 50 pCi/l to be the level of concern for beta particles.

(8) Sampled in July 2019 from select, high-risk residences. To be sampled again in 2021.

(9) The value reported is the 90th percentile of all data (30 samples) collected.

(10) The value reported is the highest running annual average. Range is all individual samples.

(11) TTHM and HAA results are averaged over four quarters at each sampling location to determine compliance with the MCL. Range of detections is from 2020, but "Result" includes late 2019 and 2020.

UCMR-4

The 1996 Safe Drinking Water Act amendments established the Unregulated Contaminant Monitoring Rule (UCMR) program. This program mandates that the U.S. Environmental Protection Agency (EPA) issue a list every five years of some thirty (30) unregulated contaminants. Data are collected throughout the country over a two-year period, and then analyzed to determine whether any of these contaminants should be classified as regulated (i.e., a potential health risk) and, if so, at what level should the regulation be set.

Contaminants are in the general categories of pesticides, herbicides, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, hormones, and more. Testing is mandated for all systems serving a population greater than 10,000, and for select smaller systems.

Important Information about Your Water

UCMR-4 (continued)

Testing recently concluded for the fourth list of contaminants (UCMR-4). The list included metals, pesticides, VOCs, SVOCs, alcohols, various disinfection byproducts (originating from disinfection of the water), and cyanotoxins (chemicals that are released into surface water supplies by algae).

The Rivanna Water and Sewer Authority began testing for UCMR-4 contaminants in the Urban system in February 2019 according to a schedule delivered to them by the EPA. Testing concluded in 2020 with three cyanotoxin contaminants. Compounds that were detected in 2019 include the following disinfection byproducts:

Bromochloroacetic acid – Urban, Crozet, Scottsville – 0.71 - 2.5 ppb
Bromodichloroacetic acid - Urban, Crozet, Scottsville – 0.67 - 2.4 ppb
Chlorodibromoacetic acid – Urban only – 0.34 ppb

And the following metal:

Manganese – Urban and Scottsville – 0.43-1.6 ppb

Each of the contaminants above has been detected in a large majority of water systems across the country. Testing for three cyanotoxin compounds in multiple events in 2020 found these compounds to be non-detected in the treated water.

For more information regarding the UCMR-4 program, please visit the following website:
<https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule>.

What Do All the Numbers Mean?

First, they show your drinking water met or exceeded all regulatory requirements during 2020. We are fortunate to have reliable sources for your drinking water needs, and well-operated treatment facilities. The information provides you with details on each potentially harmful contaminant or compound detected in your drinking water.

Definitions

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are as close to the MCLGs as possible using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. The addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to public health.

ppb: Parts per billion or micrograms per liter (ug/l). One part substance per billion parts of a solution.

ppm: Parts per million or milligrams per liter (mg/l). One part substance per million parts of a solution.

pCi/l: Picocuries per liter. This is a measure of radioactivity.

Nephelometric Turbidity Unit (NTU): A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level (AL): The concentration of a contaminant, which, if exceeded, trigger treatment of other actions by the water provider. This term is typically limited to discussions of lead and copper concentrations.

N/A: Not applicable.

<: Less than.

Important Information about Your Water

The Potential Health Risks Associated with These Contaminants

Total and Fecal Coliform Bacteria. Coliforms are a large group of bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Fecal coliform bacteria and *E. coli*, in particular, indicate a likely contamination from human or animal wastes. These microorganisms can result in short-term effects such as nausea, headache, cramps and diarrhea, and they pose a special health risk for infants, young children, the aged, and those with severely compromised immune systems.

Turbidity is a measure of the clarity of water. On its own, elevated turbidity has no health effects. However, turbid water can interfere with disinfection and may provide a medium for microbial growth. Elevated turbidity may also indicate the presence of disease-causing organisms, including bacteria, viruses or parasites that can cause such symptoms as nausea, headache, cramps and diarrhea.

Combined Radium, Gross Alpha and Gross Beta. These are naturally-occurring forms of radiation, resulting from certain minerals that are radioactive. When these minerals are eroded into the source water, radiation in the water may result. Some people who drink water containing radium, or alpha or beta emitters, over many years may have an increased risk of getting cancer.

Lead and Copper. The USEPA Lead and Copper Rule mandates a household testing program for these metals, and the values reported in the chart are from samples that were collected from select households. Infants and children who drink water containing lead in excess of the Action Level could experience delays in physical or mental development. Children could show deficits in attention span and learning abilities.

Adults who drink this water over many years could possibly develop kidney problems or high blood pressure. See the box for additional information on lead. Copper is an essential nutrient, but some who drink water containing copper in excess of the Action Level could experience gastrointestinal distress in a relatively short period of time. Some who drink this water over many years could develop kidney or liver damage. Individuals with Wilson's disease should consult their doctor.

Barium is a metal that is naturally-occurring in rock and the soil. Some people who drink water containing barium in excess of the MCL over many years may experience an increase in their blood pressure.

Fluoride is an element added at the water treatment plants to promote strong teeth. Some people who drink water containing fluoride in excess of the MCL over many years could develop bone disease, with pain and tenderness of the bones. Children who drink water containing fluoride in excess of the MCL may develop mottled teeth. See the box for additional information on fluoride.

Nitrate is a form of nitrogen found primarily in fertilizers, sewage, and runoff from natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL could develop "blue baby syndrome" in which there is a bluish coloration of the skin and shortness of breath. The infant can become seriously ill and, if untreated, may die.

Chlorine is added at the treatment plant to inactivate disease-causing microbes. Some people who use water containing chlorine in excess of the MRDL could experience irritation of the eyes, nose and skin. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

Trihalomethanes and Haloacetic Acids are compounds formed by the interaction of chlorine with naturally-occurring organic matter, and they are sometimes referred to as disinfection by-products. Chlorine is added at the treatment plant to inactivate disease-causing microbes, and organic matter is naturally present from leaves and decaying plants in the reservoirs and streams. Some people who drink water containing these compounds in excess of the MCL over many years may experience problems with their liver, kidneys or central nervous system, and may have an increased risk of getting cancer.