Bishop's Falls, Esopus creek, about 1/2 mile above Olive Bridge dam site in Ulster County, early 1900's.

NEW YORK CITY 2002 DRINKING WATER SUPPLY AND QUALITY REPORT

The New York City Department of Environmental Protection (DEP) is pleased to present its 2002 Annual Water Quality Report. This presentation is in accordance with Part 5-1.72 of the New York State Sanitary Code (10NYCRR), and the National Primary Drinking Water Regulations, 40 CFR Part 141 Subpart O, of the United States Environmental Protection Agency (EPA), which require all drinking water suppliers to provide the public with an annual statement describing the water supply and the quality of its water.

New York City's Water Supply

The New York City surface (reservoir) water supply system provides approximately 1.2 billion gallons of safe drinking water daily to over 8 million residents of New York City, approximately one million people living in Westchester, Putnam, Ulster, and Orange counties, as well as millions of tourists and commuters who visit the City throughout the year. In addition to our surface water supplies, approximately 350,000 people in southeastern Queens receive groundwater or a blend of groundwater and surface water. In all, the City system supplies high quality water to nearly half the population of New York State.

Source of New York City's Drinking Water

New York City's surface water is supplied from a network of 19 reservoirs and three controlled lakes in a 1,972 square-mile watershed that extends 125 miles north and west of New York City. In the City's ongoing efforts to maintain the appropriate volume and high quality of water in the distribution system, there is some rotation in the water sources used by DEP. Approximately 90% of our water comes from the Catskill/Delaware System (Public Water System Identification Number [PWSID] NY7003493), located in Delaware, Greene, Schoharie, Sullivan, and Ulster counties, west of the Hudson River. The Croton System (PWSID NY7003666), the City's original upstate supply, normally provides about 10% of our daily water from 12 reservoir basins in Putnam, Westchester, and Dutchess counties. However, in 2002, a drought year, the Croton System at times supplied up to 20% of the daily demand. In 2002, New York City's Groundwater System (PWSID NY7011735) in southeastern Queens operated 13 wells and supplied a daily average of 12 million gallons of drinking water, 1% of the City's total usage.

Regulation of Drinking Water

In order to ensure that tap water is safe to drink, the New York State Department of Health (NYSDOH) and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Health Department and federal Food and Drug Administration regulations establish limits for contaminants in bottled water.

Sources of drinking water worldwide (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

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 (800) 426-4791.

Ensuring a Safe, Reliable and Sufficient Water Supply

Ashokan Screen chamber showing aerator in operation with a flow of 376 million gallons daily. 1917

Watershed Protection Programs

During 2002, New York City continued implementation of its comprehensive watershed protection programs. These efforts focused on three key program areas: the acquisition of watershed lands; the enforcement of strengthened Watershed Regulations; and the expansion of partnership programs that target specific sources of pollution in the watershed. In addition, DEP continued work on a number of water quality studies, and continued implementing and funding the upgrades of non-City-owned wastewater treatment plants (WWTPs).

Land Acquisition

In 2002, DEP met the goals for soliciting watershed lands set forth in the 1997 Watershed Memorandum of Agreement. Specifically, DEP solicited owners of 48,531 acres of watershed lands in designated priority areas. In the first six years of the program, New York City solicited owners of more than 306,000 acres of Catskill and Delaware land, with 40,511 acres either acquired or under purchase contract. During 2002, 107 projects comprising 8,149 acres were closed and 89 projects accounting for 5,919 acres were signed to purchase contract.

DEP has also made significant progress in acquiring lands in critical basins. In the Kensico Reservoir basin, a total of seven projects were signed to contract in 2001 and 2002. Of the 1,038 acres eligible in the basin, the total number of acres acquired or under contract stands at 180 acres, or 17%. Of the 4,830 acres eligible in the top priority area in the Rondout Reservoir basin, the total number of acres acquired or under contract was raised to 2,594 acres (54%). Of the 12,645 acres eligible in West Branch Reservoir's top priority areas, the total number of acres acquired or under contract was raised to 7,521 acres (59%).

Watershed Regulations

On May 1, 1997, enhanced Watershed Regulations became effective, replacing regulations that had been in place since 1953. The Regulations are vital to water supply protection and provide a higher level of defense against modern-day threats to water quality. By vigorously enforcing the new Regulations, DEP is ensuring that the City's source waters are protected. The steps taken to ensure a high quality water supply include: aggressive policing and inspection of the watersheds; increased water quality monitoring; systematic inspections of wastewater treatment plants; investigations of other potentially polluting activities; and legal actions against polluters. Since 1997, DEP has reviewed thousands of applications for new or remediated septic systems, stormwater pollution prevention plans, and other projects that included one or more regulated activities to ensure compliance with the Regulations.

Partnership Programs

West of the Hudson River, many of the partnership programs are being administered by the Catskill Watershed Corporation (CWC), a non-profit corporation formed solely for this purpose. Together, CWC and DEP have implemented programs that remediated approximately 1,500 failing septic systems, completed construction of 30 winter road de-icing materials storage facilities, and funded construction of Best Management Practices (BMPs) to address existing stormwater runoff.

The Watershed Agricultural Program, funded by DEP and implemented by the Watershed Agricultural Council, has become a national model. More than 85% of watershed farms have joined the program, which develops BMPs to reduce agricultural pollution and enhance the economic viability of participating farms. The Program includes a watershed forestry component and the Conservation Reserve Enhancement Program (CREP). Under CREP, the United States Department of Agriculture (USDA) pays enhanced annual rental rates and other incentives to agricultural landowners to take environmentally sensitive lands out of production. The City and USDA each pay half the cost of treating those lands with conservation practices. There are, to date, a total of 1,227.6 acres of

riparian forest buffers under contract, which is equivalent to approximately 341 protected stream miles. In addition, there are more than 300 acres of riparian buffers that have been approved by the Council that are in the CREP contract development pipeline. There are a total of 113 contracts, of which 79 are complete and have implemented all associated BMPs.

Wastewater Treatment Plant Upgrades

In order to provide highly advanced treatment of wastewater treatment plant effluent, more than 100 plants in the Watershed are being upgraded to include phosphorous removal, sand filtration, back-up power, back-up disinfection, microfiltration (or a DEP approved equivalent), flow metering and alarm telemetry. The year 2002 was the most productive in the program to date. Upgrades of the largest West-of-Hudson facilities were completed, enabling the City to achieve its goal of having 83% of the permitted flow upgraded by August 2002. Upgrades of three plants in the Croton watershed East-of-Hudson (EOH) – Bedford Hills Correctional Facility, the I-684 Rest Area, and the Watchtower Educational Center – also were completed in 2002. Nearly 50% of facilities in the EOH watershed completed preliminary design by the end of 2002 and are expected to begin construction in 2003.

Filtration Avoidance

Based on a long-term watershed protection plan announced by DEP in late 2001, EPA granted an extension of the New York City's Catskill/Delaware Filtration Avoidance Determination (FAD) in November 2002. The extension will remain in effect for at least five years, provided that DEP continues to implement certain watershed protection programs in accordance with the 2001 long-term plan. Included are the Land Acquisition Program; the Watershed Agricultural Program; the Waterfowl Management Program; the New Infrastructure Program; the Wastewater Treatment Plant Upgrade Program; the Stream Management Program; the Septic Remediation and Replacement Program and the Stormwater Retrofit Program, administered by the Catskill Watershed Corporation (CWC); and the programs designed to protect the Kensico Reservoir. In addition, the FAD incorporates new programs proposed by the City to target areas with concentrations of failing septics; to support proper operation and maintenance of septics in the watershed; to support water quality planning and undertake certain water quality studies; and to design and construct an enhanced disinfection facility for Catskill/Delaware water.

Bronze shaft cap. City Tunnel No.1, Shaft 24. 1914

Bicycle Squad, Patrolmen-on-Aqueduct. Ashokan, NY. 1915

Improved Reliability

Improved Water Supply Security

After the events of September 11, 2001, the City took additional steps to ensure the security of the water supply system, both upstate and within the five boroughs of New York City. DEP's security program has been reviewed by federal agencies, including the FBI and the Army Corps of Engineers. Security efforts are coordinated with federal, State and local law enforcement agencies. Surveillance at facilities and properties is conducted in a number of ways, some of which may not be apparent to residents or passers-by. Access has been limited on some roadways adjacent to reservoirs and dams.

Upstate Capital Improvements

The City continued to implement a multi-year program to upgrade and improve its upstate water supply facilities, including gatehouses, aqueducts, water testing laboratories, and other facilities, which are important to ensuring a safe and reliable supply of drinking water. Much of the water supply infrastructure is between 50 and 150 years old, and certain capital improvements are required to ensure the continuation of a reliable water supply for future generations of New Yorkers.

Three branches of the Yonkers Pressure Tunnel, 8 feet by 12.5 feet, merge into the 16.6 feet circular pressure section of the Catskill Aqueduct. 1913

Croton Filtration Plant

The City is planning to build a treatment facility to filter water from the Croton System. The federal Surface Water Treatment Rule (SWTR) requires that all surface water supplies be filtered by June 29, 1993, unless the system meets special criteria to receive a waiver. Croton system water is not currently filtered, which constitutes a treatment technique violation under federal and State drinking water regulations. With the exception of the failure to provide filtration, a treatment technique violation, Croton system water continues to meet all federal and State health-related water quality standards. Even though Croton water quality is high, Croton water experiences seasonal water quality problems associated with elevated color levels, resulting from naturally-occurring minerals and organic matter present in the water. This condition is aesthetic and not health-related; however, the filtration facility is expected to reduce color levels in Croton system water, help to reduce the risk of microbiological contamination, and help ensure compliance with stricter water quality standards.

In November 1998, a Consent Decree, committing the City to design, construct, and operate a Croton filtration facility was signed by the City, the United States and the State of New York. In May 2002, the Consent Decree was modified, requiring the City to evaluate and choose between three potential sites for the filtration plant; two in the Bronx, at the Mosholu Golf Course or along the Harlem River in the vicinity of Fordham Road, and one at Eastview in Westchester County. The City will have chosen its preferred site for the facility by April 2003. Until DEP begins to filter Croton water, we are required to make the following statement: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Distribution System

City Water Tunnel No. 3

The Third Water Tunnel, begun in 1970, is being built in stages. The first stage of Tunnel No. 3, which became operational in July 1998, has already helped to improve the reliability of the City's drinking water distribution system. Stage 2 of Tunnel No. 3 includes two sections. The tunnel component of the first section of Stage 2, which is in Brooklyn and Queens, was completed in May 2001. The supply shafts, which will feed water from this new tunnel to the distribution system, are currently under construction. Once completed, this first section of Stage 2 will improve service to Staten Island, Brooklyn and Queens when it begins delivering water in 2005. The Manhattan leg is now under construction with tunneling to commence in the summer of 2003. The Tunnel is expected to be completed by 2020, encompass 60 miles and cost approximately $6 billion.

When completed, Tunnel No. 3 will create a more flexible means of supplying drinking water to the entire City and will provide delivery alternatives in the event of disruption in any of the older tunnels. It will also permit New York City to drain, examine and rehabilitate City Tunnel Nos. 1 and 2.

Groundwater System Enhancements

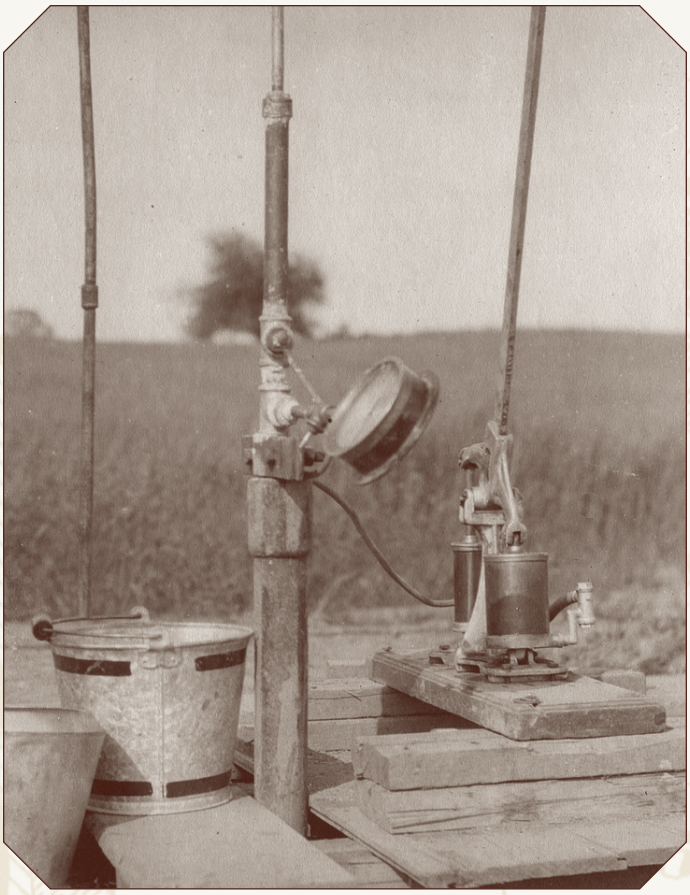
As part of the City's drought plan, and in order to be able to supplement the surface water supply in Queens with additional groundwater, DEP installed granular activated carbon filters at nine wells to provide advanced treatment to wells that were unusable due to the presence of contaminants. While these improvements were completed, these wells were not used in 2002. In addition to the improvements installed under the drought plan, a pilot plant was operated on the

groundwater supply to evaluate various new treatment systems and technologies as part of a study to develop a full scale treatment plant which would enable the City to further increase the use of the groundwater supply in the future.

Water Treatment

All surface water and groundwater entering New York City's distribution system is treated with chlorine, fluoride, orthophosphate, and, in some cases, sodium hydroxide. New York City uses chlorine to meet the New York State Sanitary Code and federal Safe Drinking Water Act disinfection requirements. Fluoride, at a concentration of one part per million, is added to help prevent tooth decay and has been added since 1966 in accordance with the New York City Health Code. Orthophosphate is added to create a protective film on pipes that reduces the release of metals such as lead from household plumbing. Sodium hydroxide is added to Catskill/Delaware water to raise the pH and reduce corrosivity.

A sequestering phosphate is applied at several wells to prevent the precipitation of naturally occurring minerals, mostly iron and manganese, in the distribution mains and customers' household piping. Air stripper facilities operate at several wells to remove volatile organic chemicals.



View showing details of testing apparatus at Wallkill pressure tunnel. 1907

Water Quality

DEP operates the water supply system that delivers water to City residents. DEP's water quality monitoring program – far more extensive than required by law – demonstrates that the quality of New York City's drinking water remains high and meets all health-related State and federal drinking water standards. Color, an aesthetic condition in the Croton and Groundwater Systems occasionally may exceed the standard.

Drinking Water Monitoring

DEP monitors the water in the distribution system, the upstate reservoirs and feeder streams, and the wells that are the sources for our supply. Water quality is monitored continuously as the water enters the distribution system, and is regularly tested at sampling points throughout the entire City. DEP conducts analyses for a broad spectrum of microbiological, chemical, and physical measures of quality. In 2002, DEP collected more than 45,600 samples from the City's distribution system and performed approximately 560,000 analyses.

DEP conducts most of its distribution water quality monitoring at approximately 1000 fixed sampling stations throughout the City. These stations, which you may have seen in your neighborhood, allow DEP to collect water samples throughout the distribution system in an efficient and sanitary manner.

Test Results

The results of the tests conducted in 2002 on distribution water samples under DEP's Distribution System Monitoring Program are summarized in the tables in this Report. These tables reflect the compliance monitoring results for all regulated and non-regulated parameters. The tables present both the federal and State standard for each parameter (if applicable), the number of samples collected, the range of values detected, the average of the values detected, and the possible sources of the parameters. The monitoring frequency of each parameter varies and is parameter specific. Data are presented separately for the Catskill/Delaware, Croton, and Groundwater Systems. Whether a particular user receives water from the Catskill/Delaware, Croton, or groundwater supplies, or a mixture, depends on location, system operations, and consumer demand. Those parameters monitored but not detected in any sample are presented in a separate box under the tables.

The State requires monitoring for some parameters less than once per year because the concentrations of these parameters do not change frequently. Accordingly, some of these data, though representative, are more than one year old. Unregulated parameter monitoring is conducted to provide a more robust picture of water quality and to help EPA determine where certain parameters occur and if it needs to regulate those parameters. In 2002, DEP conducted monitoring of certain parameters as required under the federal Unregulated Contaminants Monitoring Rule (UCMR). Those results are presented in a separate box.

Lead in Drinking Water

New York City water is virtually lead-free when it is delivered from the City's upstate reservoir system, but water can absorb lead from solder, fixtures, and pipes found in the plumbing of some buildings or homes. Mandated at-the-tap lead monitoring is conducted at a set number of households located throughout the City. Based on the results of this monitoring, in 2002, the 90th percentile did not exceed 15 µg/L. Therefore, New York City has met the established standard, or Lead Action Level (AL). The at-the-tap monitoring results are also presented in a separate table.

It is possible that lead levels in your home may be higher than other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. To request a free kit to test for lead in your drinking water, call **311** or from outside NYC call (212) NEW-YORK. Additional information is available from the EPA's Safe Drinking Water Hotline at (800) 426-4791.

Monitoring for Cryptosporidium and Giardia

In 1992, the City started a comprehensive program to monitor its source waters and watersheds for the presence of *Cryptosporidium* and *Giardia*. Since then, samples have been collected weekly from the effluents of the Kensico and New Croton Reservoirs, before water is first chlorinated in the Catskill/Delaware and Croton Systems, respectively. Since 1992, DEP has modified its laboratory protocols twice to improve the Department's ability to detect both *Giardia* cysts and *Cryptosporidium* oocysts. Even these new test methods, however, have substantial limitations in that they do not allow us to determine if organisms identified are dead or if they are capable of causing disease.

In 2002, a total of 144 samples of Kensico Reservoir effluent and 66 samples of New Croton Reservoir effluent were collected and analyzed for *Giardia* cysts and *Cryptosporidium* oocysts using Method 1623 HV. Of the 144 Kensico Reservoir samples, 95 were positive for *Giardia* and 38 were positive for *Cryptosporidium*. Of the 66 New Croton Reservoir samples, 28 were positive for *Giardia* and 13 were positive for *Cryptosporidium*. DEP's *Giardia* and *Cryptosporidium* data from 1992 to the present, along with weekly updates, can be viewed on our web site at www.nyc.gov/html/dep/html/pathogen.html. As mentioned, detecting the presence of *Giardia* cysts and *Cryptosporidium* oocysts does not indicate whether these organisms are dead or infectious.

While there is no evidence of illness related to the New York City water supply, federal and New York State law requires all water suppliers to notify their customers about the potential risks of *Cryptosporidium* and *Giardia*. Cryptosporidiosis and giardiasis are intestinal illnesses caused by microscopic pathogens, which can be waterborne. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome both of these diseases within a few weeks. DEP's Waterborne Disease Risk Assessment Program conducts active surveillance for giardiasis and cryptosporidiosis to track the incidence of illness and determine all possible causes, including tap water consumption. To date, no giardiasis or cryptosporidiosis outbreaks have been attributed to tap water consumption in New York City.

Safety Engineer collecting water samples. 1949

According to the EPA and the Centers for Disease Control and Prevention (CDC), it is unclear how most cases of cryptosporidiosis or giardiasis in the United States are contracted. The relative importance of various risk factors is unknown. Risk factors include eating contaminated food, swallowing contaminated recreational water while swimming or camping, contact with animals, contact with human waste, certain sexual practices, and drinking contaminated water. Individuals who think they may have cryptosporidiosis or giardiasis should contact their health care provider.

Some people may be more vulnerable to disease-causing microorganisms or pathogens 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 Crohn's disease or HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, *Giardia* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at (800) 426-4791.

Croton Gate House at 135 Street, NYC. 1890

DEFINITIONS

Action Level (AL):

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow. An exceedence occurs if more than 10% of the samples exceed the Action Level.

Maximum Contaminant Level Goal (MCLG):

The level of a contaminant in drinking water below which there is no known or expected risk to health. 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 set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL):

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Treatment Technique (TT):

A required process intended to reduce the level of a contaminant in drinking water.

90th Percentile Value:

The values reported for lead and copper represent the 90th percentile. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below the value. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

ABBREVIATIONS

CFU/ml = colony forming units per milliliter

mg/L = milligrams per liter (10^{-3} grams per liter)

NA = Not Applicable

ND = Lab analysis indicates parameter is not present

NDL = No Designated Limit

NTU = Nephelometric Turbidity Units

pCi/L = picocurie per liter (a measure of radioactivity)

µg/L = micrograms per liter (10^{-6} grams per liter)

µmho/cm = micromhos per centimeter

Water Conservation

On January 27, 2002, Mayor Michael R. Bloomberg declared a City-wide Drought Warning as reservoir levels fell precipitously due to lack of precipitation in the upstate watersheds. A declaration of a Stage 1 Drought Emergency followed on March 26, 2002, and the City imposed mandatory water restrictions and penalties for violating conservation rules effective April 1. The Drought Emergency continued throughout the summer. However, nearly normal rainfall through the end of 2002 raised reservoir levels enough to allow the Mayor to lift the Drought Emergency on November 1, and return to a cautionary Drought Watch. In early January 2003, with reservoir levels above normal, the Mayor removed the Drought Watch. At the same time he urged New Yorkers to observe good water conservation habits, and obey the City's year-round water use restrictions, which include prohibition on watering sidewalks and lawns between November 1 and March 31, illegally opening fire hydrants, and watering lawns and sidewalks only during permitted hours from April 1 to October 31.

DEP's ongoing efforts to save water include: installing home water meters to encourage conservation; use of sonar equipment to survey all water supply piping for leaks; replacement of approximately 70 miles of old water supply pipe a year; and equipping fire hydrants with special locking devices. These programs and others have proven successful and together have reduced water consumption in the City by approximately 200 million gallons per day in the last ten years. This is more water than the City of Boston or Westchester County use in a day.

The average single family household in New York City uses approximately 100,000 gallons of water each year, at a cost of $1.44 per 100 cubic feet of water (748 gallons), or about $190.00 each year. New York City is fortunate to have reasonably priced drinking water; however, everyone should do their part to conserve this precious resource.

You can help save water by ordering a Home or Apartment Water Saving Kit. If you are an apartment building owner/manager or a homeowner, you can obtain a free leak survey. Call our Leak Survey contractor at (718) 326-9426 for information.

Frequently Asked Questions

Does my drinking water contain fluoride?

Yes, all New York City tap water contains fluoride. In accordance with Article 141.08 of the New York City Health Code, DEP, as the New York City water supplier, adds a fluoride compound that provides our water supply with a concentration of approximately 1.0 part per million (ppm) fluoride. Fluoridation began in 1966.

Should I buy bottled water?

You do not need to buy bottled water for health reasons in New York City since our water meets all federal and State health-based drinking water standards. Also, bottled water costs up to 1,000 times more than the City's drinking water.

At times, my drinking water looks "milky" when first taken from a faucet, but then clears up. Why?

Air becomes trapped in the water as it makes its long trip from the upstate reservoirs to the City. As a result, microbubbles of air can sometimes cause water to appear cloudy or milky. This condition is not a public health concern. The cloudiness is temporary and clears quickly after the water is drawn from the tap and the excess air is released.

At times I can detect chlorine odors in tap water. What can I do about it?

Chlorine odors may be more noticeable when the weather is warmer. Chlorine is a disinfectant and is added to the water to kill germs. The following are ways you can remove the chlorine and its odor from your drinking water:

- Fill a pitcher and let it stand in the refrigerator overnight. (This is the best way.)
- Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
- Pour water from one container to another about 10 times.
- Heat the water to about 100 degrees Fahrenheit.
- Once you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

The aerators in my home are clogging with pieces of a small, whitish material. What is causing this to occur?

This problem may be accompanied by a significant drop in water pressure at the affected faucet in addition to a decrease in your hot water supply. The culprit is the hot water heater's "dip-tube." This is a long internal tube that delivers cold water to the bottom of the hot water heater tank. The tube, which is composed of polypropylene, may disintegrate. The problem affects approximately 16 million water heaters manufactured between 1993 and 1996.

Croton Aqueduct High Bridge crossing over the Harlem River. View from the Bronx looking towards Manhattan where High Bridge Water Tower can be seen. Late 1800's

Sometimes my water is a rusty brown color. What causes this?

Brown water is commonly associated with plumbing corrosion problems inside buildings and from rusting hot water heaters. If you have an ongoing problem with brown water, it is probably due to rusty pipes. It is recommended that you run your cold water for 2 - 3 minutes if it has not been used for an extended period of time. This will flush the line. You can avoid wasting water by catching your "flush" water in a container and using it to water plants or for other purposes. In addition, brown water can result from street construction or water main work being done in the area. Any disturbance to the main, including the opening of a fire hydrant, can cause pipe sediment to shift, resulting in brown water. The settling time will vary, depending on the size of the water main.

Is New York City's water "hard"?

Hardness is a measure of dissolved calcium and magnesium in the water. The less calcium and magnesium in the water ("soft" water), the easier it is to create lather and suds. Depending upon location, the hardness can be 1.0 grain/gallon ($CaCO_3$) for the Catskill/Delaware System, and 5 grains/gallon for the Croton System. New York City's water is predominantly "soft."

Contact Us

For a copy of this report, to report unusual water characteristics, or to request a free kit to test for lead in your drinking water, call **311** or from outside NYC call (212) NEW-YORK. TTY services are available by calling (212) 504-4115.

For more information on *Giardia* and *Cryptosporidium*, please contact DEP's Parasitic Disease Surveillance Unit and the New York City Department of Health (NYCDOH) at: (212) 788-4728 or **311**.

To contact NYCDOH about other water supply health related questions call **311** or call the New York State Department of Health Bureau of Public Water Supply Protection at (518) 402-7650.

To report any pollution, crime or terrorism activity occurring both in-City and in the watershed, call the Water-Watch Hotline at 1-888 H2O-SHED (426-7433).

To view this 2002 Statement, announcements of public hearings, or other information, visit DEP's Web site at:

www.nyc.gov/dep

Este reporte contiene información muy importante sobre el agua que usted toma. Haga que se la traduzcan o hable con alguien que la entienda.

Ce rapport contient des informations importantes sur votre eau potable. Traduisez-le ou parlez en avec quelqu'un qui le comprend bien.

Rapò sa a gen enfòmasyon ki enpòtan anpil sou dlo w'ap bwè a. Fè tradwi-l pou ou, oswa pale ak yon moun ki konprann sa ki ekri ladan-l.

Ten raport zawiera bardzo istotną informacje o twojej wodzie pitnej. Przetłumacz go albo porozmawiaj z kimś kto go rozumie.

В этом материале содержится важная информация относительно вашей питьевой воды. Переведите его или поговорите с кем-нибудь из тех, кто понимает его содержание.

這個報告中包含有關你的飲用水的重要信息。
請將此報告翻譯成你的語言，或者詢問懂得這份報告的人。

이 보고서는 귀하의 식수에 관한 매우 중요한 정보를 포함하고 있습니다. 이 정보에 대해 이해하는 사람에게 그 정보를 번역하거나 통역해 받으십시오.

New York City
Department of Environmental Protection
59-17 Junction Boulevard
Flushing, New York 11373-5108


New York City's
Water Supply System
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP
Catskill/Delaware
Watersheds
Croton
Watershed
CHENANGO COUNTY
OTSEGO COUNTY
SCHOHARIE COUNTY
ALBANY COUNTY
RENSSELAER COUNTY
Albany
Oneonta
Gilboa
Delhi
DELAWARE COUNTY
Hunter
Schoharie Reservoir
Shandaken Tunnel
Catskill Delaware
GREENE COUNTY
COLUMBIA COUNTY
MASSACHUSETTS
125 Miles
Cannonsville Reservoir
Walton
Downsville
Pepacton Reservoir
Phoenicia
Esopus Creek
Ashokan Reservoir
Deposit
West Branch Delaware
East Delaware Tunnel
West Delaware Tunnel
East Branch Delaware
Kingston
DUTCHESS COUNTY
Hudson River
CONNECTICUT
Neversink Reservoir
Rondout Reservoir
ULSTER COUNTY
Catskill Aqueduct
Liberty
Neversink Tunnel
Delaware Aqueduct
Poughkeepsie
100 Miles
Delaware River
SULLIVAN COUNTY
Ellenville
Chelsea Pumping Station
Boyds Corner Reservoir
Lake Gleneida
Middle Branch Reservoir
Lake Gilead
Bog Brook Reservoir
East Branch Reservoir
Kirk Lake
Croton Falls Reservoir
Diverting Reservoir
Titicus Reservoir
Amawalk Reservoir
Cross River Reservoir
Muscoot Reservoir
PUTNAM COUNTY
WESTCHESTER COUNTY
Neversink River
75 Miles
ORANGE COUNTY
West Branch Reservoir
New Croton Reservoir
PENNSYLVANIA
50 Miles
NEW YORK
NEW JERSEY
ROCKLAND COUNTY
Hudson River
Kensico Reservoir
White Plains
Hillview Reservoir
Croton Aqueduct
25 Miles (from City Hall)
Jerome Park Reservoir
Long Island Sound
Bronx
Manhattan
NASSAU COUNTY
Queens
Brooklyn
Staten Island
New York Bay
Atlantic Ocean
Catskill / Delaware Watershed Area
Croton Watershed Area
Rivers and Reservoirs
Catskill Aqueduct and Tunnels
Croton Aqueduct
Delaware Aqueduct and Tunnels
County Borders
State Borders
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This map of the City indicates the general areas where water can be supplied by the Catskill/Delaware, Croton and Groundwater Systems.

NEW YORK CITY
DRINKING WATER QUALITY TESTING RESULTS 2002

DETECTED PARAMETERS

PARAMETERS	NYS DOH MCL	US EPA MCLG	CATSKILL/DELAWARE SYSTEM			CROTON SYSTEM			GROUNDWATER SYSTEM			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS												
Alkalinity (mg/L CaCO3)	-		227	9.7 - 30.2	15	46	36.9 - 61	54.3	228	4.7 - 196.2	65.5	Erosion of natural deposits
Aluminum (µg/L)	50 - 200 [1]		218	4 - 34	13	46	ND - 14	9	47	ND - 15	5	Erosion of natural deposits
Barium (mg/L)	2	2	221	0.01 - 0.03	0.02	46	0.02 - 0.03	0.03	59	ND - 0.1	0.02	Erosion of natural deposits
Calcium (mg/L)	-		302	5.4 - 12.8	7.6	53	13.8 - 27.9	23.2	233	7.7 - 83.3	25.5	Erosion of natural deposits
Chloride (mg/L)	250		637	9 - 65	12	96	29 - 71	55	222	10 - 87	41	Naturally occurring; road salt
Chlorine Residual, free (mg/L)	4 [2]		9208	0.04 - 2.2	0.8	1396	0.06 - 1.7	0.8	624	0.04 - 1.9	0.9	Water additive for disinfection
Color - distribution system (color units)	-		8108	3 - 48	7	1032	5 - 40	12	624	1 - 44	5	Presence of iron, manganese, and organics in water
Color - entry points (color units)	15 [3]		1103	3 - 22	7	365	**6 - 35**	14	350	**1 - 22**	5	Iron and manganese; or organic sources, such as algal growth
Copper (mg/L)	1.3 [4]	1.3	307	ND - 0.06	0.01	53	0.01 - 0.12	0.02	223	ND - 0.52	0.04	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Corrosivity (Langelier index)	0 [1, 5]		217	-2.7 to -1.7	-2.2	46	-1.4 to -0.9	-1.2	87	-3.9 to - 0.8	-1.0	
Fluoride (mg/L)	2.2 [3]		1680	0.03 - 2.7	0.9	409	0.3 - 1.1	1	616	0.2 - 2.2	1.1	Erosion of natural deposits; water additive which promotes strong teeth; runoff from fertilizer
Hardness (mg/L CaCO3)	-		229	19 - 47	26	46	57 - 106	92	232	34 - 352	110	Erosion of natural deposits
Hardness (grains/gallon[US]CaCO3)[6]	-		229	1 - 2.7	1.5	46	3.3 - 6.2	5.3	232	2 - 20.5	6.4	Erosion of natural deposits
Iron (µg/L)	300 [3, 7]		270	**20 - 1020**	60	383	30 - 390	100	218	ND - 3620	290	Naturally occurring
Lead (µg/L)	15 [4]	0	293	ND - 20	0.7	49	ND - 20	0.6	220	ND - 16	0.8	Corrosion of household plumbing systems; erosion of natural deposits
Magnesium (mg/L)	-		229	1.3 - 3.7	1.8	46	4.6- 9.1	7.7	232	2.8 - 35.2	11.5	Erosion of natural deposits
Manganese (µg/L)	300 [3, 7]		273	**12 - 371**	44	383	21 - 227	87	218	ND - 331	52	Naturally occurring
Nickel (µg/L)	-		221	ND	ND	46	ND	ND	59	ND - 5	ND	Erosion of natural deposits
Nitrate (mg/L nitrogen)	10	10	631	0.10 - 1.09	0.19	96	0.04 - 0.31	0.21	222	ND - 9.87	2.93	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (mg/L nitrogen)	1	1	217	ND - 0.005	0.002	46	0.001 - 0.004	0.002	84	ND - 0.006	0.001	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units)[8]	6.5 - 8.5 [1]		9211	6.2 - 8.1	7.1	1397	6.9 - 7.4	7.2	624	6.3 - 8.2	7.3	
Phosphate, Ortho- (mg/L)	-		9207	ND - 3.3	2.1	1394	0.1 - 3.3	2.1	624	0.5 - 3	1.6	Water additive for corrosion control
Phosphate, Total (mg/L)	-		0	-	-	0	-	-	26	0.6 - 5.4	3.7	Water additive for corrosion control
Potassium (mg/L)	-		218	0.6 - 1.2	0.7	46	1.4 - 2.5	2.1	47	0.7 - 2.4	1.3	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-		226	0.8 - 5.1	2	46	1.8 - 3.7	3.1	174	3.5 - 24.4	12.8	Erosion of natural deposits
Sodium (mg/L)	NDL[9]		218	3 - 14	9	46	16 - 31	25	92	6 - 54	28	Naturally occurring; road salt; water softeners; animal waste
Specific Conductance (µmho/cm)	-		9211	80 - 191	100	1397	192 - 391	315	624	140 - 732	323	
Strontium (µg/L)	-		218	20 - 40	30	46	50 - 90	70	47	30 - 150	70	Erosion of natural deposits
Sulfate (mg/L)	250		637	6.3 - 14.3	7.1	96	8.5 - 13.7	11.6	222	11.3 - 103.6	35.1	Naturally occurring
Temperature (°F)	-		9211	36 - 79	55	1397	39 - 76	55	624	42 - 82	59	
Total Dissolved Solids (mg/L)	500 [1]		217	28 - 132	58	46	117 - 298	186	92	65 - 419	223	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L carbon)	-		217	1.2 - 2.1	1.5	46	2.2 - 3.3	2.8	48	ND - 1.5	0.8	Organic matter naturally present in the environment
Turbidity[10] - distribution system (NTU)	5 [11]		8108	0.7 - 1.3	1	1032	0.9 - 1.4	1.1	624	0.5 - 0.9	0.6	Soil runoff
Turbidity[10] - entry points (NTU)	1 [12]		-	-	-	365		**1.7**	-	-	-	Soil runoff
UV 254 Absorbency (absorbency unit)	-		217	0.021 - 0.045	0.029	46	0.038 - 0.069	0.057	48	0.01 - 0.05	0.021	Organic matter naturally present in the environment
Zinc (mg/L)	5		232	ND - 0.024	0.002	46	ND - 0.005	0.001	211	ND - 0.594	0.072	Naturally occurring
MICROBIAL PARAMETERS												
Total Coliform Bacteria (% of samples positive/month)	5%	0	9169	ND - 0.5%	0.2%	1397	ND - 2.0%	0.3%	661	ND - 1.5%	0.2%	Naturally present in the environment
E. coli (CFU/100mL)	[13]	0	9169	1		1397	ND		661	ND		Human and animal fecal waste
Heterotrophic Plate Count (CFU/mL)	TT	-	3952	ND - 96	ND	626	ND - 15	ND	261	ND - 3	ND	Naturally present in the environment

LEAD AND COPPER RULE SAMPLING AT RESIDENTIAL WATER TAPS: January - June 2002

PARAMETERS	NYS DOH AL	US EPA MCLG	# SAMPLES	RANGE	90th PERCENTILE VALUES	# SAMPLES EXCEEDING AL	SOURCES IN DRINKING WATER
Copper (mg/L)	1.3	1.3	107	0.01 - 0.43	0.31	0	Corrosion of household plumbing systems
Lead (µg/L)	15	0	107	ND - 38	15	11	Corrosion of household plumbing systems

Highlighted and bolded values indicate an exceedence occurred

DETECTED PARAMETERS (continued)

PARAMETERS	NYS DOH MCL	US EPA MCLG	CATSKILL-DELAWARE SYSTEM			CROTON SYSTEM			GROUNDWATER SYSTEM			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
ORGANIC CONTAMINANTS												
Disinfection By-Products detected:												
Bromochloroacetic acid (µg/L)	50		247	ND - 4	2	54	ND - 4	2	24	ND - 2	1	By-product of drinking water chlorination
Chloral Hydrate (µg/L)	50		16	1.6 - 11	5.3	3	4.9 - 8	6.4	-	-	-	By-product of drinking water chlorination
Chloropicrin (µg/L)	50		16	0.3 - 0.7	0.4	3	0.4 - 0.9	0.5	-	-	-	By-product of drinking water chlorination
Haloacetic acid 5 (HAA5) (µg/L)	60 [14]		236	12 - 63	34	45	32 - 71	49	20	1 - 25	14	By-product of drinking water chlorination
Haloacetonitriles (HANs) (µg/L)	50		16	1.2 - 5	2.9	3	5 - 9.1	7.1	-	-	-	By-product of drinking water chlorination
Halogenated ketones (HKs) (µg/L)	50		16	1.5 - 4.5	2.6	3	3.5 - 5.5	4.6	-	-	-	By-product of drinking water chlorination
Total Organic Halogen (µg/L)			217	85 - 200	137	46	181 - 257	215	47	ND - 131	57	By-product of drinking water chlorination
Total Trihalomethanes (µg/L)	80 [14]		568	9 - 58	31	97	24 - 87	48	150	ND - 44	18	By-product of drinking water chlorination
Principal Organic Contaminants detected:												
Bromomethane (µg/L)	5		568	ND	ND	97	ND - 0.6	ND*	149	ND - 0.6	< 0.5	Used to kill a variety of pests; used to make other chemicals or as a solvent to get oil out of nuts, seeds, and wool
n-Butylbenzene (µg/L)	5		568	ND	ND	97	ND	ND	150	ND - 0.6	< 0.5	Solvent used in organic synthesis
Carbon Tetrachloride (µg/L)	5	0	568	ND	ND	97	ND	ND	150	ND - 0.6	ND*	Discharge from chemical plants and other industrial activities
Dichlorodifluoromethane (µg/L)	5		567	ND	ND	97	ND	ND	149	ND - 2.2	< 0.5	Refrigerant; aerosol propellant; foaming agent
Styrene (µg/L)	5	100	568	ND	ND	97	ND	ND	150	ND - 0.6	ND*	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (µg/L)	5	0	568	ND	ND	97	ND	ND	148	ND - 4.7	0.8	Discharge from dry cleaners
Toluene (µg/L)	5	1000	568	ND	ND	97	ND	ND	150	ND - 1.9	< 0.5	Discharge from petroleum factories
1,2,3-Trichlorobenzene (µg/L)	5		568	ND	ND	97	ND	ND	150	ND - 0.7	ND*	Discharge from textile finishing factories
1,2,4-Trichlorobenzene (µg/L)	5	70	568	ND	ND	97	ND	ND	150	ND - 0.6	ND*	Discharge from textile finishing factories
Trichloroethene (µg/L)	5	0	568	ND	ND	97	ND	ND	150	ND - 1.7	< 0.5	Residual of cleaning solvents and metal degreasers
m-Xylene (µg/L)	5	10,000 (total)	568	ND	ND	97	ND	ND	150	ND - 1.8	ND*	Leaks from gasoline tanks; discharge from petroleum factories; leaching of solvent from lining of potable water tanks
o-Xylene (µg/L)	5	10,000 (total)	568	ND	ND	97	ND	ND	150	ND - 0.7	ND*	Leaks from gasoline tanks; discharge from petroleum factories; leaching of solvent from lining of potable water tanks
p-Xylene (µg/L)	5	10,000 (total)	568	ND	ND	97	ND	ND	150	ND - 1.8	ND*	Leaks from gasoline tanks; discharge from petroleum factories; leaching of solvent from lining of potable water tanks
Specified Organic Contaminants detected:												
Dieldrin (µg/L)	5		3	ND	ND	2	ND	ND	12	ND - 0.07	ND*	Pesticide used in agriculture for soil and seed treatment; used in treatment of wood and mothproofing of woolen products; by-product of the pesticide aldrin. In the US, most uses were banned in 1987; however it is still found in our environment from past years.
Unspecified Organic Chemicals detected:												
Acetone (µg/L)	50		550	ND - 25	5	95	ND	ND	143	ND - 22	< 10	Occurs naturally and is used in the production of paints, varnishes, plastics, adhesives, organic chemicals and alcohol. Also used to clean and dry parts of precision equipment
DCPA Metabolites (µg/L)	50		3	ND	ND	1	ND	ND	10	ND - 0.77	0.37	Runoff from pesticide use
Methyl tert-butyl ether (MTBE) (µg/L)	50		568	ND	ND	97	ND	ND	150	ND - 1.3	< 0.5	Additive to gasoline in the water

UNDETECTED PARAMETERS

UNDETECTED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS

Antimony, Arsenic, Asbestos [15], Beryllium, Bromide, Cadmium, Chlorate, Chromium, Cyanide, Foaming Agents, Gross Alpha Particle, Lithium, Mercury, Selenium, Silver, 90Strontium - radiological, Thallium, Tritium (3H) - radiological

UNDETECTED ORGANIC CONTAMINANTS

Principal Organic Contaminants not detected:

Benzene, Bromobenzene, Bromochloromethane, sec-Butylbenzene, tert-Butylbenzene, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2 Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3 Dichloropropene, Ethylbenzene, Isopropylbenzene, p-Isopropyltoluene, Methylene chloride, n-Propylbenzene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichlorofluoromethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene

Specified Organic Contaminants not detected:

Alachlor, Aldicarb (Temik), Aldicarb sulfone, Aldicarb sulfoxide, Aldrin, Atrazine, Benzo(a)pyrene, Butachlor, Carbaryl, Carbofuran (Furadan), Chlordane, 2,4-D, Dalapon, 1,2-Dibromo-3-chloropropane, Dicamba, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl) phthalate, Dinoseb, Diquat, Endothall, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, Metolachlor, Metribuzin, Oxamyl (Vydate), Pentachlorophenol, Picloram, Polychlorobiphenyls [PCBs], Propachlor, Simazine, Toxaphene, 2,4,5-TP (Silvex), 2,3,7,8-TCDD (Dioxin), Vinyl chloride

Unspecified Organic Chemicals not detected:

Acenaphthene, Acenaphthylene, Acetochlor, Acifluorfen, tert-Amyl methyl ether, Anthracene, Bentazon, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[g,h,I]perylene, a-BHC, b-BHC, d-BHC, Bromacil, 2-Butanone (MEK), Butylbenzylphthalate, tert-butyl ethyl ether, Caffeine, a-Chlordane, g-Chlordane, Chlorobenzilate, Chloroneb, Chlorothalonil (Draconil, Bravo), Chlorpyrifos (Dursban), Chrysene, 2,4-DB, p,p'DDD, p,p'DDE, p,p'DDT, Diazinon, Dibenz[a,h]anthracene, Di-n-Butylphthalate, 3,5-Dichlorobenxoic acid, Dichlorprop, Dichlorvos (DDVP), Diethylphthalate, Diisopropyl ether, Dimethoate, Dimethylphthalate, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Di-N-octylphthalate, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, EPTC, Fluoranthene, Fluorene, Indeno[1,2,3-cd] pyrene, Isophorone, Malathion, Methiocarb, 4-Methyl-2-pentanone (MIBK), Molinate, Naphthalene, 4-Nitrophenol, trans-Nonachlor, Paraquat, Parathion, Permethrin, Phenanthrene, Prometryn, Propoxur (Baygon), Pyrene, 2,4,5-T, Terbacil, Thiobencarb, Trichlorotrifluoroethane (freon), Trifluralin

UNREGULATED CONTAMINANTS MONITORING RULE (UCMR) PARAMETERS - not detected

Acetochlor, DCPA metabolites[16], p,p'DDE, Diazinon, 2,4-Dichlorophenol, 2,4-Dinitrophenol, 2,4-Dinitotoluene, 2,6-Dinitrotoluene, 1,2-Diphenylhydrazine, Disulfoton, Diuron, EPTC, Fonofos, Linuron, 2-Methylphenol, Methyl tert-butyl ether (MTBE), Molinate, Nitrobenzene, Perchlorate, Prometon, 2,4,6-Trichlorophenol, Terbacil, Terbufos

FOOTNOTES

(1) USEPA Secondary MCL; NYSDOH has not set an MCL for this parameter.

(2) Value represents MRDL which is a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. The MRDL is enforceable in the same manner as an MCL.

(3) Determination of MCL violation: If a sample exceeds the MCL, a second sample must be collected from the same location within 2 weeks. If the average of the two results exceeds the MCL, then an MCL violation has occurred.

(4) Action Level (not an MCL) measured at the tap. The data presented in this table were collected from sampling stations at the street curb. For at the tap monitoring see the next table.

(5) A Langelier Index of less than zero indicates corrosive tendencies.

(6) Hardness of up to 3 grains per gallon is considered soft water; between 3 and 9 is moderately hard water.

(7) If iron and manganese are present, the total concentration of both should not exceed 500 µg/L. Values in the groundwater system above the MCL are not a violation because the water at particular wells is treated, as allowed by the State, to meet aesthetic concerns.

(8) The average for pH is the median value.

(9) Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

(10) Turbidity is a measure of cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality and can hinder the effectiveness of disinfection.

(11) This MCL for turbidity is the monthly average rounded off to the nearest whole number. Data presented are the range and average of monthly averages.

(12) This MCL only applies to the Croton System. The value presented is the highest monthly average for 2002.

(13) If a sample and its repeat sample are both positive for coliform bacteria and one of the two samples is positive for *E. coli*, then an MCL violation has occurred.

(14) USEPA MCLs for HAA5 and TTHMs are the calculated quarterly running average. In 2002, the MCL was never exceeded. Data presented are the range of individual sampling results and the highest running quarterly average.

(15) The NYSDOH has issued a waiver for asbestos monitoring in the Groundwater System since no asbestos cement pipes are used anywhere in the distribution system.

(16) Under the UCMR monitoring, none of the UCMR parameters were detected except for one sample collected on 6/10/02 at site W36T which detected DCPA Metabolites at 1.4 µg/L. DCPA Metabolites and MTBE, both analytes being evaluated under the UCMR, were detected in groundwater samples collected as part of DEP's routine monitoring as noted in the table above.

* The contaminant was detected in only one sample. The level found was below the MCL.

EXCEEDENCES

Color:

In the Croton System there were 7 color violations at the entry point on 1/01/02, 1/14/02, 3/1/02, 6/22/02, 6/27/02, 8/2/02, and 8/8/02. In the Groundwater System there was one color violation on 7/10/02 at the well W36T entry point. Color has no health effects unless detected in very high concentrations. In some instances, color may be objectionable to some people at as low as 5 units. Its presence is aesthetically objectionable and suggests that the water may need additional treatment.

Iron:

In the Catskill/Delaware System, the MCL for iron was exceeded on 5/10/02 at site 17550 with a value of 1020 µg/L, and on 7/8/03 at site 43250 with a value of 910 µg/L. Iron has no health effect. At 1,000 µg/L, a substantial number of people will note the bitter astringent taste of iron. Also, at this concentration, it imparts a brownish color to laundered clothing and stains plumbing fixtures with a characteristic rust color. Staining can result at levels of 50 µg/L, lower than those detectable to taste buds. Therefore, the MCL of 300 µg/L represents a reasonable compromise as adverse effects are minimized at this level. Many multivitamins may contain 3000 to 4000 µg/L of iron per capsule.

Manganese:

On the Catskill/Delaware System, the MCL for total iron and manganese of 500 µg/L was exceeded on 7/8/03 at site 43250 with a value of 910 µg/L for iron and 294 µg/L for manganese. The Food and Nutrition Board of the National Research Council determined an estimated safe and adequate daily dietary intake of manganese to be 2000-5000 µg/L for adults. However, many people's diet lead them to consume even higher amounts of manganese, especially those who consume high amounts of vegetables or are vegetarian. The infant population is of greatest concern. It would be better if the drinking water were not used to make infant formula since it already contains iron and manganese.

Excess manganese produces a brownish color in laundered goods and impairs the taste of tea, coffee, and other beverages. Elevated concentrations may cause a dark brown or black stain on porcelain plumbing fixtures. As with iron, manganese may form a coating on distribution pipes. These may slough off, causing brown blotches on laundered clothing or black particles in the water.

Turbidity:

In the Croton System, the monthly average entry point MCL for turbidity was exceeded in January and August of 2002. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. During January and August, disinfection levels were far above the requirements, ensuring that NYC's drinking water was safe to consume. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. Please pay special attention to the additional statement in this document regarding *Cryptosporidium*.