



All Drinking Water May Contain 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. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Lead in Home Plumbing

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 City of East Orange Board of Water Commissioners is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. 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 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

There When You Need Us

The City of East Orange Board of Water Commissioners (EOBWC) is pleased to present its Annual Water Quality Report, covering all testing performed between January 1 and December 31, 2016. Over the years, the Board of Water Commissioners, in conjunction with the various divisions within the Department, has been dedicated to producing drinking water that exceeds all state and federal standards.

The EOBWC is proud to continue delivering the best quality drinking water to you, our customers. As new challenges to drinking water safety emerge, the EOBWC will remain vigilant in meeting the goals of safe drinking water, source water protection, water conservation, and community education. The EOBWC will uphold the needs of all our water users, with the highest levels of integrity and professionalism.

We encourage you to share your thoughts with us on the information contained in this report. Should you have any questions or concerns about your water, please contact us at (973) 266-8869.

**City of East Orange
Water Department**



**99 South Grove Street
East Orange, NJ 07018**

Community Participation

We want our valued customers to be informed about their water utility. Regularly scheduled Board of Water Commissioners meetings are held on the third Tuesday of each month at 99 South Grove Street, East Orange, at 5:00 pm.



Presented by the
**City of East Orange
Board of Water Commissioners
and The East Orange
Water Department**

**2017
Annual Drinking
Water Quality
Report**

(Reporting year 2016)

Our Drinking Water Is Regulated

The City of East Orange Board of Water Commissioners and The East Orange Water Department is pleased to share this report with you. This report is a summary of the quality of the water we provide our customers. The analysis covers January 1 through December 31, 2016, and was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) required tests and is presented in the attached pages. We hope this information helps you become more knowledgeable about what's in your drinking water.

Where Do We Get Our Drinking Water?

This year the Township of South Orange Village Water System was supplied with an average of 3 million gallons of water each day for domestic consumption, fire protection, ground irrigation, and other water supply needs.

The source of water supply provided to the Township of South Orange Village Water System is from groundwater derived through Well No. 17, located in Grove Park, Township of South Orange Village, and the balance from the East Orange Water Reserve located in Livingston, Millburn, and Florham Park. In rare instances when an emergency should arise, the Township of South Orange Village Water System has water interconnections with the New Jersey American Water Company and the City of Newark.

To learn more about our watershed, go to the U.S. EPA's Surf Your Watershed at www.epa.gov/surf.

Source of Drinking Water

The sources of drinking water (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 activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and vola-

tile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Source Water Assessment

The New Jersey Department of Environmental Protection (NJDEP) has completed and issued the Source Water Assessment Report and Summary for this public water system, which is available at www.state.nj.us/dep/swap or by contacting NJDEP's Bureau of Safe Drinking Water at (609) 292-5550. You may also contact the City of East Orange Water Department's Customer Service Division at (973) 266-8869 to obtain information regarding your water system's Source Water Assessment.

South Orange Water System PWSID # 0719001 South Orange Village ratings reflect the potential for contamination of source water, not the existence of contamination. If a system is rated highly susceptible for a contaminant category, this does not mean a customer is or will be consuming contaminated drinking water.

The following categories were rated with high potential to contaminate our water supply: volatile organic compounds, inorganics, radionuclides and radon.

The following categories were rated with medium potential to contaminate our water supply: nutrients, disinfection by-product precursors.

The following categories were rated with low potential to contaminate our water supply: pathogens, pesticides.

South Orange Water System is a public community water system consisting of 1 well(s), 0 wells under the influence of surface water, 0 surface water intake(s), 1 purchased ground water source(s), and 1 purchased surface water source(s).

This system's source water comes from the following aquifer: Brunswick Aquifer This system purchases water from the following water systems: City of East Orange Water Department, New Jersey American Water Company – Short Hills, and the City of Newark.

Susceptibility Ratings for South Orange Water System Sources

The information below illustrates the susceptibility ratings for the seven contaminant categories (and radon) for each source in the system. The information provides the number of wells and intakes that rated high (H), medium (M), or low (L) for each contaminant category. For susceptibility ratings of purchased water, refer to the specific water system's source water assessment

report.

The seven contaminant categories are defined at the bottom of this page. NJDEP considered all surface water highly susceptible to pathogens; therefore, all intakes received a high rating for the pathogen category. For the purpose of Source Water Assessment Program, radionuclides are more of a concern for ground water than surface water. As a result, surface water intakes' susceptibility to radionuclides was not determined and they all received a low rating.

Public water systems are required to monitor for regulated contaminants and to install treatment if any contaminants are detected at frequencies and concentrations above allowable levels. As a result of the assessments, NJDEP may customize (change existing) monitoring schedules based on the susceptibility ratings.

- Pathogens: Disease-causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.
- Nutrients: Compounds, minerals and elements that aid growth, that are both naturally occurring and manmade. Examples include nitrogen and phosphorus.
- Volatile Organic Compounds: Man-made chemicals used as solvents, degreasers, and gasoline components. Examples include benzene, methyl tertiary butyl ether (MTBE), and vinyl chloride.
- Pesticides: Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing centers of pesticides. Examples include herbicides such as atrazine, and insecticides such as chlordane.
- Inorganics: Mineral-based compounds that are both naturally occurring and man-made. Examples include arsenic, asbestos, copper, lead, ~md nitrate.
- Radionuclides: Radioactive substances that are both naturally occurring and man-made. Examples include radium and uranium.
- Radon: Colorless, odorless, cancer-causing gas that occurs naturally in the environment. For more information go to <http://www.nj.gov/dep/rpp/radon/index.htm> or call (800) 648-0394.
- Disinfection Byproduct Precursors: A common source is naturally occurring organic matter in surface water. Disinfection byproducts are formed when the disinfectants (usually chlorine) used to kill pathogens react with dissolved organic material (for example leaves) present in surface water.

We routinely monitor for contaminants in your drinking water according to Federal and State laws. The test results table shows the results of our monitoring for the period of January 1 to December 31, 2016. In the table you might find terms and abbreviations you are not familiar with. To help you better understand these terms we've provided the following definitions:

Definitions

- **Action Level (AL)** – the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Action Level Goal (ALG)** – the level of a contaminant in drinking water below which there is no known or expected risk to health. ALGs allow for a margin of safety.
- **Avg.** – Regulatory compliance with some MCLs is based on running annual average of monthly samples.
- **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. Secondary MCLs are unenforceable guidelines for aesthetic quality of water.
- **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 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.
- **Maximum Residual Disinfectant Level Goal (MRDLG)** – the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **NA** – not applicable.
- **ND** – not detected.
- **NTU** – Nephelometric Turbidity Units.
- **Parts per billion (ppb)** – micrograms per liter (µg/L) or one ounce in 7,800,000 gallons of water.
- **Parts per million (ppm)** – milligrams per liter (mg/L) or one ounce in 7,800 gallons of water.
- **pCi/L (picocuries per liter)** – A measure of radioactivity.
- **RUL (Recommended Upper Limit)** – RULs are established to regulate the aesthetics of drinking water (i.e., taste and odor).
- **TT** – treatment technique.

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 from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Regulated Substances¹

| Substance (Unit of Measure) | Year Sampled | MCL [MRDL] | MCLG [MRDLG] | City of East Orange | | Township of South Orange Village | | City of Newark | | Violation Yes/No | Likely Source of Contamination |
|--|-----------------|---------------|-----------------|------------------------|------------|-------------------------------------|-----------|--------------------|-------|---------------------|---|
| | | | | Amount Detected | Range | Amount Detected | Range | Amount Detected | Range | | |
| Alpha Emitters (pCi/L) | 2008 | 15 | 0 | ND | NA | 4.4 | NA | ND | NA | No | Erosion of natural deposits |
| Arsenic (ppb) | 2016 | 5 | 0 | 0.595 | NA | 1.48 | NA | <0.5 | NA | No | Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes |
| Barium (ppm) | 2016 | 2 | 2 | 0.477 | NA | 0.995 | NA | <0.008 | NA | No | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits |
| Beryllium (ppb) | 2016 | 4 | 4 | <0.029 | NA | <0.029 | NA | NA | NA | No | Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries |
| Cadmium (ppb) | 2016 | 5 | 5 | <0.05 | NA | <0.029 | NA | NA | NA | No | Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints |
| Chlorine ⁶ (ppm) | 2016 | [4] | [4] | 0.94 (AA) | 0.16-1.99 | 0.67 (AA) | 0.27-0.94 | 0.587 (AA) | NA | No | Water additive used to control microbes |
| <i>* Amount detected represents an annual average.</i> | | | | | | | | | | | |
| Chromium (ppb) | 2016 | 100 | 100 | 1.23 | NA | <0.651 | NA | ND | NA | No | Discharge from steel and pulp mills; Erosion of natural deposits |
| Cyanide (ppb) | 2016 | 200 | 200 | <3.7 | NA | <3.7 | NA | NA | NA | No | Discharge from steel/metal factories; discharge from plastic and fertilizer factories |
| Fluoride (ppm) | 2016 | 4 | 4 | <0.25 | NA | ND | NA | 0.073 | NA | No | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Stage II Haloacetic Acids [HAAs] (ppb) | 2016 | 60 | NA | 37.82 | 18.52-57.6 | 1 | ND - 2.73 | 44.3 | 30-57 | No | By-product of drinking water disinfection |
| Mercury (ppb) | 2016 | 2 | 2 | <0.034 | NA | <0.034 | NA | <0.0002 | NA | No | Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands |
| Nitrate (ppm) | 2016 | 10 | 10 | 1.5 | NA | 2.37 | NA | <0.5 | NA | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |

| | | | | | | | | | | | |
|---|------|------------------------------------|----|----------------------------|----------------|--------|-------------|--------|----------|----|--|
| Selenium (ppb) | 2016 | 50 | 50 | <1.58 | NA | <1.58 | NA | NA | NA | No | Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines |
| Tetrachloroethylene (ppm) | 2016 | 0.005 | 0 | 0.00111 (RAA) ³ | 0.0005-0.00218 | NA | NA | NA | NA | No | Discharge from factories and dry cleaners |
| Thallium (ppb) | 2016 | 2 | 2 | <0.575 | NA | <0.575 | NA | NA | NA | No | Leaching from ore-processing sites; discharge from electronics, glass, and drug factories |
| Stage II Total Trihalo-methanes [TTHMs] (ppb) | 2016 | 80 | NA | 61.86 | 10.71-81.73 | 8 | 2.22 - 9.70 | 50.4 | 37-59 | No | By-product of drinking water disinfection |
| Total Coliform Bacteria (% positive samples) | 2016 | 5% of monthly samples are positive | 0 | 2.3% | | 0 | | 0.004% | | No | Naturally present in the environment |
| Turbidity ⁴ (NTU) | 2016 | TT=1 NTU | NA | NA | NA | NA | NA | 0.22 | 0.1-0.34 | No | Soil runoff |
| Uranium (ppb) | 2008 | 30 | 0 | 3.3 | NA | 10 | NA | ND | NA | No | Erosion of natural deposits |
| Xylenes (total) (ppm) | 2016 | 10 | 10 | 0.00114 | NA | NA | NA | NA | NA | No | Discharge from petroleum factories; discharge from chemical factories |

Lead and Copper Contaminants – Township of South Orange Village

| Substance (Unit of Measure) | AL | MCLG | Year Sampled | Your Water | # of sites found above AL | Violation Yes/No | Likely Source of Contamination |
|--------------------------------|-----|------|--------------|------------|---------------------------|------------------|--|
| Copper (ppm) (90th percentile) | 1.3 | 1.3 | 2016 | 0.382 | 0/33 | No | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives |
| Lead (ppb) (90th percentile) | 15 | 0 | 2016 | 0.91 | 0/33 | No | Corrosion of household plumbing systems; erosion of natural deposits |

Secondary Substances

| Substance (Unit of Measure) | Year Sampled | RUL | City of East Orange | | Township of South Orange Village | | City of Newark | | Likely Source of Contamination |
|--|--------------|---------|---------------------|-------|----------------------------------|-------|-----------------|-------|---|
| | | | Amount Detected | Range | Amount Detected | Range | Amount Detected | Range | |
| Alkalinity (ppm) | 2016 | NS | 16.8 | NA | ND | NA | 30.3 | NA | Naturally present in the environment |
| Aluminum (ppm) | 2016 | ≤0.200 | <0.01 | NA | ND | NA | 0.035 | NA | Erosion of natural deposits; residual from some surface water treatment processes |
| Chloride (ppm) | 2016 | 250 | 113 | NA | ND | NA | 41.6 | NA | Runoff/leaching from natural deposits |
| Color (units) | 2016 | 10 | <2 cu | NA | ND | NA | 3 | NA | Naturally occurring organic materials |
| Foaming Agents (ppm) | 2016 | 0.5 | <0.05 | NA | 0.032 | NA | ND | NA | Detergents/similar substances when water is agitated |
| Hardness [as CaCO ₃] (ppm) | 2016 | 250 | 328 | NA | NA | NA | 57 | NA | Naturally occurring |
| Iron (ppm) | 2016 | 0.3 | <0.2 | NA | ND | NA | 0.013 | NA | Naturally present in the environment |
| Manganese ⁵ (ppb) | 2016 | 50 | 0.00298 | NA | 43.6 | NA | 0.027 | NA | Leaching from natural deposits |
| pH (units) | 2016 | 6.5-8.5 | 7.8pH | NA | ND | NA | 8.08 | NA | Naturally occurring |
| Sodium (ppm) | 2016 | 50 | NA | NA | 44.3 | NA | 22.1 | NA | Naturally occurring |
| Sulfate (ppm) | 2016 | 250 | 46.8 | NA | 23.8 | NA | 11.2 | NA | Runoff/leaching from natural deposits; industrial wastes |
| Total Dissolved Solids (ppm) | 2016 | 500 | 460 | NA | ND | NA | 127 | NA | Runoff/leaching from natural deposits |
| Zinc (ppm) | 2016 | 5 | <0.01 | NA | NA | NA | <0.2 | NA | Moderately abundant naturally occurring element used in the metal industry |

1. Under a waiver granted on December 30, 1998, by the State of New Jersey Department of Environmental Protection, our system does not have to monitor for synthetic organic chemicals/pesticides because several years of testing have indicated that these substances do not occur in our source water. The SDWA regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, volatile organic chemicals, and synthetic organic chemicals. Our system received monitoring waivers for synthetic organic chemicals and asbestos.

2. LRAA = Locational Running Annual Average

3. RAA = Running Annual Average

4. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU (no sample may exceed 1 NTU).

5. The recommended upper limit for manganese is based on staining of laundry. Manganese is an essential nutrient, and toxicity is not expected from high levels which would be encountered in drinking water.

6. Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

7. AA = Annual Average

About Our Violations

City of East Orange - During the 2nd half of 2016, the Lead and Copper Water Quality Parameters were submitted late to the N.J. Department of Environmental Protection (NJDEP). During 2016, the Iron and Manganese test results were submitted late to the NJDEP. The late submissions did not have any impact on public health and safety. We have already taken the steps to ensure that all water quality results are reported and submitted on time to the NJDEP.

Township of South Orange Village - During the 3rd and 4th quarter monitoring period of July/1/2016 - December/31/2016 LEAD and COPPER were submitted to the N.J. Department of Environmental Protection (NJDEP). The system was required to monitor for water quality parameters during the referenced 6-month monitoring period within the Distribution System and biweekly at each Point of Entry and did not have any impact on public health and safety. We have already taken the steps to ensure that all water quality results are reported and submitted on time to the NJDEP.