
SAFE
DRINKING
WATER
CSEA

Courtesy of NYS DEC

Where does your water come from?

Potable Water

- Water for drinking, bathing, showering, cooking, dishwashing, and oral hygiene.

Non- Potable Water

- Water not meant for consumption. Cooling, fire safety rinsing etc.

Requirements for Potable Water

- **29 CFR 1910.141 (b)(1)(i)**
  - Potable water shall be provided in all places of employment, for drinking, washing of the person, cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.
  - Requirement of Employer.
  - OSHA AND PESH enforce this standard.

Private

- If your water comes from a private source (a well) it is your responsibility for water quality.

Public

A water system which provides water to the public with the following criteria:

- Is for human consumption,
- Transferred through pipes or any man made system
- The system has a minimum of 5 service connections, and serves at least 25 people.

- **10 NYCRR Part 5-1.10**
  - The rules contained in this Subpart, together with the watershed rules and regulations set forth in Parts 100 through 158 of this Title, have been promulgated to protect present or future sources of water supply.
  - The provisions of sections 5-1.10 through 5-1.15 of this Subpart shall apply, throughout the State of New York, to all existing and proposed sources of water supply.
  - Deals with **public water supplies.**
  - Department of Health enforces this law.

- 88% of Americans receive water from public systems.
- Systems are classified by size.
- Sources of water are either surface water or underground well water.

Public Water

HOAs, schools, apartment complexes and trailer parks require:

- a certified operator appropriate for the size system,
- an annual testing schedule,
- maintenance schedules,
- security assessments,
- security vulnerability reports,
- emergency action plans, and
- hourly to weekly monitoring.

State DOH Enforcement

- 36 Counties and NYC have created a local program to effectively administer NYCRR Part 5
- The other counties are controlled by State Department of Health

District	Counties Served	Address	Telephone
Canton	St. Lawrence	58 Gouverneur Street, Canton 13617-3200	(315) 386-1040
Geneva	Ontario, Wayne, Yates	624 Pre Emption Road, Geneva 14456-1334	(315) 789-3030
Glens Falls	Saratoga, Warren, Washington	77 Mohican Street, Glens Falls 12801-4429	(518) 793-3893
Herkimer	Fulton, Herkimer, Montgomery	5665 State Route 5, Herkimer 13350-9721	(315) 866-6879
Hornell	Schuyler, Steuben	107 Broadway, Room 105, Hornell 14843-0430	(607) 324-8371
Monticello	Sullivan	50 North Street, Suite 2, Monticello 12701-1711	(845) 794-2045
Oneonta	Delaware, Greene, Otsego	28 Hill Street, Suite 201, Oneonta 13820-9804	(607) 432-3911
Saranac Lake	Essex, Franklin, Hamilton	41 St. Bernard Street, Saranac Lake 12983-1839	(518) 891-1800
Watertown	Jefferson, Lewis	Dulles State Office Building, 317 Washington Street, Watertown 13601-3741	(315) 785-2277

Water Testing

- The regulations require that your water be tested and made publicly available.
- Testing Reports
  - All depends on what system you fall under:
    - Annual Water Statements
      - Sent Annually.
      - Must be directly delivered.
        - Contact your employer for access to information at work.
        - This is considered an exposure record and access is granted to information through 1910.1020.
    - Private Reports
      - These must be accessed directly from local Department of Health office or State District Office.
      - Approved water samples may be required before the sale of a home.

Testing Requirements

What is tested for?

- Naturally Occurring and Man-Made Contaminants (ex: Lead, PFOA).
- Microbial Pathogens (ex: bacteria, e-coli)
- Physical characteristics (ex: color, pH)

How often is it tested?

- Based on the population.
  - More people served, the more frequent testing

Where is it tested?

- It depends on what the sample test is for where and when it should be tested. For schools it is tested at the school supply source.

What about new Chemicals not listed in Regulations?

- New York relies on EPA's health advisories for guidance.

Maximum Contaminant Levels (MCL)

Highest level of contaminants allowed in drinking water

Established to ensure that water is safe for people to drink and will not cause harmful effects or illness- not all have mcl.

Contaminant	Violation Yes/No	Date of Sample	Level Detected (Avg./Max) (Range)	Unit Measu re-ment	MCLG	Regulatory Limit (MCL, TT or AL)	Likely Source of Contamination
Turbidity [1]	N	9/30/16	Highest After Filter 0.20 NTU	NTU	NA	TT = ≤ 1.0NTU	Soil runoff
Turbidity [1]	N	2016	100% ≤ 0.3	NTU	NA	TT = 95% of samples ≤ 0.3NTU	Soil runoff
Distribution Turbidity [2]	N	7/16	0.25 NTU	NTU	NA	MCL > 5NTU	Soil runoff
Chlorine Residual	N	1/16-12/16	0.85 (0.75 – 0.95)	mg/l	MRDL 4.0	MRDLG 4.0	Added for disinfection
Flouride	N	2016	0.6 – 0.8	mg/l	NA	2	Naturally occurring and added to drinking water
Nitrate	N	5/3/16	0.30	mg/l	10	10.0 mg/l	Fertilizer, soil run off
Arsenic	N	5/3/16	<0.00200	mg/l	NA	0.01mg/l	Naturally present in the environment
Barium	N	5/3/16	0.0210	Mg/l	2.00	2.00	Soil runoff
Lead [4&7]	N	8/6/14	90% = 1.3ug/l Range is (ND -7.6)ug/l	ug/l	0	15 ug/l	Corrosion of household plumbing
Copper [3&7]	N	8/6/14	90% = 43.3 Range is (2.1–150)ug/l	ug/l	1.3	1300 ug/l	Corrosion of household plumbing

Sample Testing Report

Radioactive Materials

- Alpha / photon emitters
  - Erosion of natural deposits of certain minerals
  - Increased risk of cancer
  - MCL: 15 picocuries(pCi) per Liter
- Beta photon emitters
  - Erosion of natural and man-made deposits of minerals
  - Increased risk of cancer
  - MCL: 4 millirems (mRem) per year
- Radium 226 and Radium 228
  - Erosion of natural deposits of certain minerals
  - Increased risk of cancer
  - MCL: 5 picocuries(pCi) per Liter
- Uranium
  - Erosion of natural deposits of certain minerals
  - Increased risk of cancer
  - MCL: 30 micrograms (µg) per Liter

Inorganic Contaminants

Contaminant	MCL
Asbestos	7.0 Million fibers/liter (longer than 10 microns)
Arsenic	0.010 mg/L (milligram per liter)
Cyanide (Free Cyanide)	0.2 mg/L
Chloride	250.0 mg/L
Fluoride	2.2 mg/L
Iron	0.3 mg/L
Mercury	0.002 mg/L
Sodium	20 mg/L (for a severely restricted sodium diet) 270 mg/L (for a moderately restricted diet)

What is a mg/L? A milligram per liter is the same as one part per million (ppm).
One ppm (mg/L) is like **1** minute in 2 **YEARS!**

Other Potential Contaminants

- Antimony
  - Discharge from petroleum refineries, fire retardants, ceramics, electronics and solder.
  - Increased cholesterol, decreased blood sugar.
  - MCL: 30 micrograms (µg) per Liter
- Arsenic
  - Erosion of natural deposits, runoff of orchards, runoff from glass and electronic production waste.
  - Skin damage, problems with circulatory systems, may have increased risk of cancer.
  - MCL: 0.010 micrograms (µg) per Liter
- Asbestos (fibers > 10 micrometers)
  - Erosion of natural deposits and asbestos cement in water mains.
  - Increased risk of benign intestinal polyps.
  - MCL: 7 million fibers per Liter
- Cyanide
  - Discharge from steel/metal factories and plastic and fertilizer factories.
  - Nerve damage or thyroid problems.
  - MCL: 0.2 micrograms (µg) per Liter

Organic Materials

- Benzene
  - Discharge from factories, leaching from gas storage tanks and landfills
  - Anemia, decrease in blood platelets, increased risk of cancer
  - MCL: 0.005 micrograms (µg) per Liter
- Chlorobenzene
  - Discharge from chemical and agricultural factories
  - Kidney or Liver problems
  - MCL: 0.1 micrograms (µg) per Liter
- Dinoseb
  - Runoff from herbicide used on soybeans and vegetables
  - Reproductive problems
  - MCL: 0.007 micrograms (µg) per Liter
- Polychlorinated biphenyls (PCB's)
  - Runoff from landfills, discharge of waste chemicals
  - Skin changes, thymus gland problems, immune deficiencies, reproductive or nervous system difficulties, increased risk of cancer
  - MCL: 0.0005 micrograms (µg) per Liter

Notice that these are not natural products???

Organic Contaminants

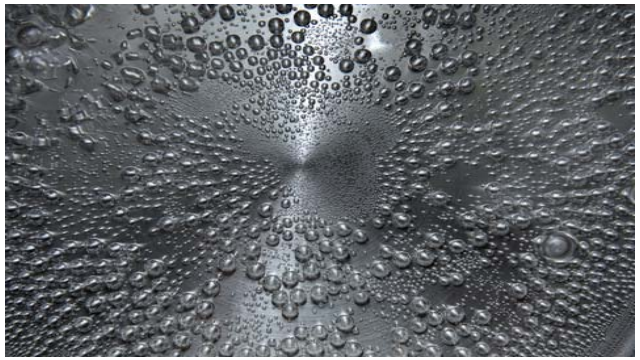
Contaminant	MCL
Principle Organic Contaminants	
Benzene	0.005 mg/L
Carbon Tetrachloride	0.005 mg/L
Ethylbenzene	0.005 mg/L
Xylenes	0.005 mg/L
Specific Organic Contaminants	
PCB's	0.0005 mg/L
Vinyl Chloride	0.002 mg/L
Disinfection By-Products	
Trihalomethanes	0.08 mg/L
Haloacetic Acids	0.06 mg/L

Microbial Contaminants

Contaminant	MCL
Coliforms	No positive sample
E. Coli	No positive sample
Giardia	No positive sample
Chryptosporidium	No positive sample

Boil Water Advisories

- Occur due to numerous failed coliforms tests.
- Indicate that bacteria is still present after water has been processed.
- Failed test reported to NYS DOH by lab.



Public Notices

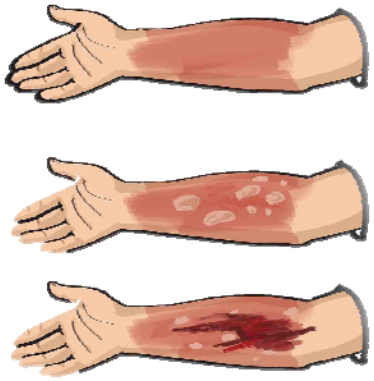
Notices must contain:

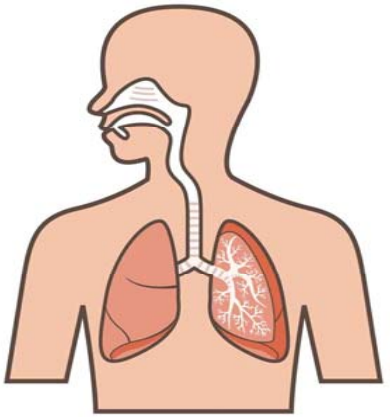
- A description of the violation that occurred, including the contaminant(s) of concern, and the contaminant level(s);
- When the violation or situation occurred;
- The potential health effects (including standard required language);
- The population at risk, including subpopulations vulnerable if exposed to the contaminant in their drinking water;
- Whether alternate water supplies need to be used;
- What the water system is doing to correct the problem;
- Actions consumers can take;
- When the system expects a resolution to the problem;
- How to contact the water system for more information; and
- Language encouraging broader distribution of the notice.

Potential Health Concerns

Routes of Exposure

- Ingestion – Drinking, eating food washed in water
- Absorption – Bathing and showering through skin.
- Inhalation – Breathing in water droplets suspended in air (think hot shower).





Potential Health Concerns

Acute vs. Chronic Concerns

- Acute- Can quickly attack or compromise your immune system.
  A short period of exposure.
  - Example: Bacteria in water can cause gastrointestinal issues

- Chronic- A long term period of exposure which slowly attacks or compromises your immune system.
  - Example, PFOA- Kidney Cancer

Courtesy of NYS DEC

Watershed

- An area or ridge of land that separates waters flowing to different rivers, basins, or seas.

Incidents that Affect Water Treatment

- Recent incidents/accidents near the inlet source.
  - Snow/Ice on the roads? Salt, sand and chemical treatments used to de-ice roads.
  - Car accident? Gasoline, Oils and other fluids from the vehicle.
  - Chemical plant spill? What chemicals came out of the plant?
  - Fire? Are special foams used to extinguish the fire? What other chemicals are flowing with the extinguisher water?

Petersburgh, NY / Hoosick Falls PFOA (Polyfluoro-octanoic Acid or C8)

- 2014 Michael Hickey sent samples to a private lab in Canada looking for cause for father's kidney cancer.
- 2001Class action lawsuit against DuPont for contaminating ground water on the WV-PA border
- DEC/DOH Investigation

Newburgh, NY PFOS

- Firefighting foam from Stewart Air Force base blamed for releasing PFOS into public water and private wells.
- PFOS is a sister chemical to PFOA

PFOA (C8) and PFOS

- Polyfluoro-octanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) are specific chemicals that are a part of a larger grouping of chemicals called polyfluoroalkyl substances. (PFAS)
- These chemicals were used as surfactants (lowers surface tension, think soap) in the process of making:
  - Furniture fabrics
  - Clothing
  - Teflon cookware
  - Fire-fighting foams
- These chemicals fall into the class of not regulated. The EPA has listed guidelines for the contaminant.
  - This is called a Health Advisory Limit
    - For PFOA it is 70 ppt (Part per **Trillion**)
    - For PFOS it is 70 ppt (Part per **Trillion**)
- Carbon Filtration works great for removal.

Flint, Michigan & Lead

- State appointed Emergency Management changed source of water supply from Lake Huron to the Flint River. 4/25/14-10/16/15
- After switch residents complained about taste, color, odor and skin rashes.
- Aging plumbing with lead components, combined with disinfectant to control bacteria in water lead to a more aggressive corrosion of pipes.
- Two waves of Legionnaires Disease, killing 12 and affecting 80 others.

Lead

- Easily the most notable contaminant since the Flint crisis.
- Stagnation of water in pipes that contain lead (leaching).
- Will cause acute adverse health effects in children:
  - Delays in physical or mental development.
  - Could show slight deficits in attention span and learning abilities.
  - Short terms at high concentrations can cause death.
- Chronic effects:
  - Kidney problems.
  - High Blood Pressure.

Copper

- Erosion of natural deposits and corrosion of household plumbing systems
- Acute Effects:
  - Gastrointestinal Distress
- Chronic effects:
  - Liver and Kidney damage
  - If you have Wilson's Disesase, contact your doctor about the if copper level in water is above the action level (1.3 mg/L)

EPA United States Environmental Protection Agency

Lead and Copper Rule: A Quick Reference Guide

Overview of the Rule	
Title[1]	Lead and Copper Rule (LCR)[2], 56 FR 26460 - 26564, June 7, 1991
Purpose	Protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water, primarily by reducing water corrosivity. Pb and Cu enter drinking water mainly from corrosion of Pb and Cu containing plumbing materials.
General Description	Establishes action level (AL) of 0.015 mg/L for Pb and 1.3 mg/L for Cu based on 90th percentile level of tap water samples. An AL exceedance is not a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement (LSLR).
Utilities Covered	All community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) are subject to the LCR requirements.

Public Health Benefits	
Implementation of the LCR has resulted in	▶ Reduction in risk of exposure to Pb that can cause damage to brain, red blood cells, and kidneys, especially for young children and pregnant women. ▶ Reduction in risk of exposure to Cu that can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.

How to Help-At Work

- Ask your employer for the latest water test.
  - This is a part of your exposure record.
  - This is requestable under the 1910.1020 rules.
    - Employers have 15 working days to provide it.
- Request but don't expect carbon filters.
- Have a bottled water or water cooler system.

- NOTE: Most water test results are from the raw water (entrance) and finished (post treatment) locations at a water treatment facility. Although many are taken strategically throughout a distribution system depending on the sample.

How to Help-At Work

CSEA members have the ability to be proactive in their communities and the preventions of watershed contamination.

- Bus Drivers- See the roads, accidents and fires that happen in community.
- Road Workers- Work on the road and spread the salt or sand in winter months, not to mention the items that a road contains.
- Outdoor Workers- Review the kinds and amounts of fertilizers and pesticides used. Is there a less harmful substitute?
- Sanitation Workers- Communicate hazardous material runoffs from garbage piles.
- Hospital Workers- Properly dispose of biological wastes and prescription medicine.
- Other ways to help at work?

Employer Considerations

- Maintain potability and prevent back flow.
- Ensure routine housekeeping and clean receptacles frequently.
- Flush lines that are infrequently used.
- Flush lines after repairs and services.
- Have water agreements in leases with building owners.
- Identify spaces where water can stagnate (be trapped).

How to Help-At Home

- How many people know their watershed?
- How many people know the phone number to their local Health Department?
- How many people know their local water workers?
- How many people thought about the contamination of their watershed before this class?
- Home Kit

How to Help-At Home

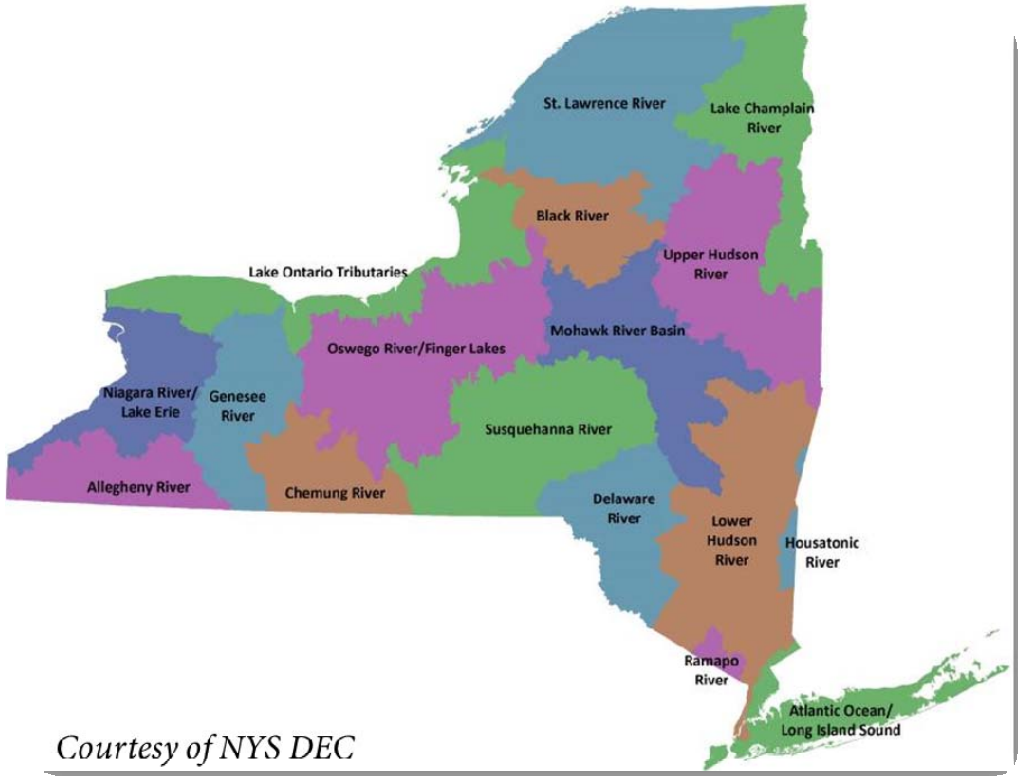
- If you see something, call someone. Call your local water or health department.
- If you see an oil or gasoline spill, report it.
- Use fertilizers and pesticides sparingly.
- If someone is in an area of a fire hydrant or a water testing point and shouldn't be, call the authorities.
- Take care of your septic systems, flush them every 3 years.
- Clean up after your pets.
- Check your home for a water softener/ water filtration system. If you are not regularly replacing the filters, bypass them completely to not contaminate yourself or loved ones.

Other Useful Information

- NYS has many coalitions that are working on watershed plans.
  - IE: LEWPA, FLOPA, etc.
  - Has an understanding of the effects of the watershed, both upstream of source and downstream.
  - They provide training to residents and business about the contamination of watersheds.
  - Works with local organizations and conservation districts to help protect watershed.

- Visit NYS DEC: https://www.dec.ny.gov/lands/36064.html
- Visit EPA: https://www.epa.gov/environmental-topics/water-topicsw
- Visit NYS DOH: https://www.health.ny.gov/environmental/water/drinking/

You have one water source, don't let anyone contaminate it!



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