



# ERIE COUNTY WATER AUTHORITY

## 2009 Water Quality Monitoring Report - Annual Water Quality Report Supplement



### DETECTED CONTAMINANTS

Metals, Inorganics, Physical Tests	Violation Yes/No	Sample Date (or date of highest detection)	MCL	MCLG	Level Detected	Sources in Drinking Water
Asbestos	No	8/06	7 MFL	7 MFL	ND - 0.2 MFL, Average = 0.08	Erosion of natural deposits; decay of asbestos cement water mains
Barium	No	5/09	2 mg/liter	NE	0.02 mg/liter	Erosion of natural deposits; drilling and metal wastes
Chloride	No	3/09	250 mg/liter	NE	17 - 30 mg/liter, Average = 21	Naturally occurring in source water
Chlorine	No	2/09	MRDL = 4.0 mg/liter	MRDLG = 4 mg/liter	<0.20 to 2.2 mg/liter, Average = 0.79	Added for disinfection
Fluoride <sup>1</sup>	No	4/09	2.2 mg/liter	2.2 mg/liter	0.50 to 1.21 mg/liter, Average = 0.94	Added to water to prevent tooth decay
Lead <sup>2</sup>	No	9/07	15 ug/liter (AL)	0 ug/liter (AL)	ND - 38 ug/liter, 90th percentile 4 ug/liter, 1 of 97 above AL	Home plumbing corrosion; natural erosion
Nitrate	No	11/09	10 mg/liter	10 mg/liter	0.17 to 0.19 mg/liter, Average = 0.18	Runoff from fertilizer use
pH	No	4/09	NR	NE	7.1 - 8.8 SU, Average = 7.9	Naturally occurring; adjusted for corrosion control
Turbidity <sup>3</sup>	No	8/09	TT	NE	0.64 NTU highest detected; 99.5% was lowest monthly % < 0.3 NTU	Soil runoff

<sup>1</sup> Our system is one of the many drinking water systems in New York State that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the United States Centers for Disease Control, fluoride is very effective in preventing cavities when present in drinking water at an optimal range from 0.8 to 1.2 mg/l (parts per million). To ensure that the fluoride supplement in your water provides optimal dental protection, the State Department of Health requires that the Erie County Water Authority monitor fluoride levels on a daily basis. During the addition of fluoride in 2009, monitoring showed fluoride levels in your water were in the optimal range 91% of the time. None of the monitoring results during fluoride addition showed fluoride at levels that approached the 2.2 mg/l MCL for fluoride.

<sup>2</sup> Lead is not present in the drinking water that is treated and delivered to your home. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. The Erie County Water Authority 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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>. The level presented represents the 90th percentile of the 97 sites tested. A percentile is a value on a scale of 100 that indicates a percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead or copper values detected in the water system. In this case, 97 samples were collected in the water system and the 90th percentile value for lead was the sixth highest value (4 ug/L). The action level for lead was exceeded at only one of the sites tested (38 ug/L). The action level for copper was not exceeded at any of the sites tested.

<sup>3</sup> Turbidity is a measure of the cloudiness of water. ECWA monitors turbidity because it is a good indicator of the effectiveness of our filtration system. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for bacterial growth. 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. Our highest single turbidity measurement (0.64 NTU) for the year occurred on 8/10/09 when the Sturgeon Point Water Treatment Plant encountered a treatment upset which caused the combined effluent turbidity to exceed 0.3 NTU for a period of time. Corrective actions were taken until the plant turbidities were below the 0.3 NTU MCL. State regulations require that the delivered water turbidity must always be below 1 NTU in the combined filter effluent. The regulations also require that 95% of the turbidity samples collected have measurements below 0.3 NTU. The combined filter turbidities were < 0.3 NTU 99.5% of the time for the month of August 2009. The turbidity levels recorded were within the acceptable range allowed and did not constitute a treatment technique violation. Additional testing was performed to insure that the microbial quality of the water was maintained.

Organic Compounds	Violation Yes/No	Sample Date (or date of highest detection)	MCL (ug/liter)	MCLG (ug/liter)	Level Detected (ug/liter)	Sources in Drinking Water
Total Trihalomethanes <sup>4</sup>	No	8/09	RAA = 80	NE	12 - 74 ug/liter, RAA = 40 ug/liter	By-product of water disinfection (chlorination)
Total Haloacetic Acids <sup>5</sup>	No	8/09	RAA = 60	NE	6 - 52 ug/liter, RAA = 18 ug/liter	By-product of water disinfection (chlorination)

<sup>4</sup> Trihalomethanes are byproducts of the water disinfection process that occur when natural organic compounds react with the chlorine required to kill harmful organisms in the water. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer. The level detected represents the highest running annual average of quarterly results. This result (40 ug/L) is below the MCL.

<sup>5</sup> Haloacetic acids are byproducts of the water disinfection process required to kill harmful organisms. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer. The level detected represents the highest running annual average of quarterly results. This result (18 ug/L) is below the MCL.

Radioactive Parameters	Violation Yes/No	Sample Date (or date of highest detection)	MCL (ug/liter)	MCLG (ug/liter)	Level Detected (ug/liter)	Sources in Drinking Water
Gross Alpha	No	1/05	15.0 pCi/liter	0 pCi/liter	ND - 1.7 pCi/liter	Erosion of natural deposits
Gross Beta	No	9/04	50** pCi/liter	0 pCi/liter	ND - 2.2 pCi/liter	Decay of natural and man-made deposits
Combined Radium 226/Radium 228	No	1/05	5.0 pCi/liter	0 pCi/liter	ND	Erosion of natural deposits
Total Uranium	No	6/04	30 ug/liter	0 ug/liter	ND - 0.48 ug/liter	Erosion of natural deposits

\*\* New York State Department of Health considers 50 pCi/liter to be the level of concern for beta particles.

## DETECTED CONTAMINANTS

Microbiological Parameters	Violation Yes/No	Sample Date (or date of highest detection)	MCL	MCLG	Level Detected (ug/liter)	Sources in Drinking Water
Total Coliform Bacteria	No <sup>6</sup>	8/09 <sup>7</sup>	>5% of samples positive	NE	0.44% = highest percentage of monthly positives	Naturally present in environment
E. coli Bacteria	No <sup>8</sup>	8/09 <sup>7</sup>	Any confirmed positive sample	0	1 sample tested positive in 2009, but did not confirm	Human and animal fecal waste

<sup>6</sup> A violation occurs when more than 5% of the total coliform samples collected per month are positive. Only 2 samples were total coliform positive out of 458 samples taken during August.

<sup>7</sup> During August, one distribution system sample tested positive for total coliform only, and one entry point sample at the Sturgeon Point plant tested positive for both total coliform and E.coli. For both cases, follow-up sampling, testing and reporting were performed as required by regulation, and the results were negative for both total coliform and E.coli in each case.

<sup>8</sup> A violation occurs when a total coliform positive sample is positive for E. coli and a repeat total coliform sample is positive or when a total coliform positive sample is negative for E. coli but a repeat total coliform sample is positive and the sample is also positive for E.coli.

Giardia and Cryptosporidium	Violation Yes/No	Sample Date (or date of highest detection)	Number of Samples Testing Positive		Number of Samples Tested
			Giardia	Cryptosporidium	
Source Water	No	10/09	7	0	23
Treated Drinking Water	No	NA	0	0	24

Cryptosporidium is a microscopic pathogen found in surface waters throughout the United States, as a result of animal waste runoff. It can cause abdominal infection, diarrhea, nausea, and abdominal cramps if ingested. Our filtration process effectively removes Cryptosporidium. No Cryptosporidium was detected in any samples taken in 2009.

Giardia is a microbial pathogen present in varying concentrations in many surface waters. In 2009, Giardia was detected in 7 of 23 raw source water samples but was not detected in any treated drinking water samples. Giardia is removed/inactivated through a combination of filtration and disinfection or by disinfection alone.

UNREGULATED SUBSTANCES				
Parameter	MCL	MCLG	Average Level Detected (mg/liter)	Range (mg/liter)
Alkalinity	NR	NE	92	55-133
Calcium Hardness	NR	NE	93	73-140
Conductivity	NR	NE	286 uS/cm	184 -329 uS/cm
MIB and Geosmin	NR	NE	1.1 ng/liter	ND - 5.2 ng/liter
Total Dissolved Solids	NR	NE	157	148 - 162
Total Organic Carbon	NR	NE	2.1	1.2 - 3.4

**Results are from 2009 analyses or from the most recent year that tests were conducted in accordance with regulatory requirements. Some tests are not required to be performed on an annual basis. Information can be obtained upon request from the ECWA Water Quality Laboratory (716) 685-8570 or on the Internet at [www.ecwa.org](http://www.ecwa.org).**

## ABBREVIATIONS AND TERMS

**AL** = Action Level: the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.

**CFU/100 ml** = Colony Forming Units per 100 milliliters  
**MCL** = Maximum Contaminant Level: the highest level of a contaminant allowed in drinking water.

**MCLG** = Maximum Contaminant Level Goal: the level of a contaminant in drinking water below which there is no known or expected risk.

**MFL** = Million fibers/liter (Asbestos)

**mg/liter** = milligrams per liter (parts per million)

**MRDL** = Maximum Residual Disinfectant Level : 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.

**MRDLG** = Maximum Residual Disinfectant Level Goal: 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 contamination.

**mrem/yr** = millirems per year

**uS/cm** = Microsiemens per centimeter (a unit of conductivity measurement)

**ND** = Not Detected: absent or present at less than testing method detection limit.

**ng/liter** = nanograms per liter = parts per trillion

**NE** = Not Established

**NR** = Not Regulated

**NTU** = Nephelometric Turbidity Units

**pCi/liter** = picocuries per liter

**RAA** = Running Annual Average

**SU** = Standard Units (pH measurement)

**TT** = Treatment Technique: a required process intended to reduce the level of a contaminant in drinking water.

**ug/liter (ug/L)** = micrograms per liter (parts per billion)

**Variations and Exemptions** = State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

**<** = Denotes Less Than

**≤** = Denotes Less Than or Equal To

## TYPES OF CONTAMINANTS

**Contaminants that may be present in source water before we treat it 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 storm water runoff, industrial domestic waste water discharges, oil and gas production, mining or farming.

**Pesticides and Herbicides**, which may come from a variety of sources such as urban storm water runoff, agricultural and residential uses.

**Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

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

**COMPOUNDS OR ELEMENTS TESTED FOR BUT NOT DETECTED**

2-Chlorotoluene	2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)	Copper	Napthalene
4-Chlorotoluene	2,2',4,4',6-pentabromodiphenyl ether (BDE-100)	Cyanide	Nickel
2,4-D	1,1,2-Trichloroethane	DCPA Diacid degradate	Nitrite
4,4'-DDE	1,2,3-Trichloropropane	DCPA Monoacid degradate	Nitrobenzene
DCPA monoacid degradate	1,1,2-Trichlorotrifluoroethane	Dalapon	N-nitroso-diethylamine (NDEA)
1,2-Dibromo-3-Chloropropane	1,2,4-Trimethylbenzene	Di(2-ethylhexyl) adipate	N-nitroso-dimethylamine (NDMA)
DCPA monoacid degradate	1,3,5-Trimethylbenzene	Di(2-ethylhexyl) phthalate	N-nitroso-di-n-butylamine (NDBA)
1,2-Dibromoethane	Acetochlor	Dibromomethane	N-nitroso-di-n-propylamine (NDPA)
1,2-Dichlorobenzene	Acetochlor ethane sulfonic acid (ESA)	Dicamba	N-nitroso-methylethylamine (NMEA)
1,3-Dichlorobenzene	Acetochlor oxanilic acid (OA)	Dichlorodifluoromethane	N-nitroso-pyrrolidine (NPYR)
1,4-Dichlorobenzene	Alachlor	Dieldrin	Oxamyl (Vydate)
1,1-Dichloroethane	Alachlor ethane sulfonic acid (ESA)	Dinoseb	PCB 1016
1,2-Dichloroethane	Alachlor oxanilic acid (OA)	Diquat	PCB 1221
1,1-Dichloroethylene	Aldicarb	EPTC	PCB 1232
cis-1,2-Dichloroethylene	Aldicarb Sulfone	Endothall	PCB 1242
trans-1,2-Dichloroethylene	Aldicarb Sulfoxide	Endrin	PCB 1248
1,2-Dichloropropane	Aldrin	Ethylbenzene	PCB 1254
1,3-Dichloropropane	Antimony	Glyphosate	PCB 1260
2,2-Dichloropropane	Arsenic	Heptachlor	Pentachlorophenol
1,1-Dichloropropene	Atrazine	Heptachlor Epoxide	Perchlorate
cis-1,3-Dichloropropene	Benzene	Hexachlorobenzene	Pichloram
trans-1,3-Dichloropropene	Benzo(a)pyrene	Hexachlorobutadiene	Propacchlor
1,3-dinitrobenzene	Beryllium	Hexachlorocyclopentadiene	Propoxur
2,4-Dinitrotoluene	Bromobenzene	Hexahydro-1,3,5-trinitro-1,3,5-triazine	n-Propylbenzene
2,6-Dinitrotoluene	Bromochloromethane	Isopropylbenzene	Selenium
3-Hydroxycarbofuran	Bromomethane	p-Isopropyltoluene	Simazine
1-Napthol	Butachlor	Lindane	Styrene
2,3,7,8-TCDD (Dioxin)	n-Butylbenzene	Manganese	Terbacil
2,4,5-TP (Silvex)	sec-Butylbenzene	Mercury	Tetrachloroethylene
1,1,1,2-Tetrachloroethane	t-Butylbenzene	Methiocarb	Thallium
1,1,1,2,2-Tetrachloroethane	Cadmium	Methomyl	Toluene
1,2,3-Trichlorobenzene	Carbaryl	Methoxychlor	Toxaphene
1,2,4-Trichlorobenzene	Carbofuran	Methyl t-butyl ether (MTBE)	Trichloroethylene
1,1,1-Trichloroethane	Carbon Tetrachloride	Methylene Chloride	Trichlorofluoromethane
1,1,2-Trichloroethane	Chlordane	Metolachlor	Vinyl Chloride
2,4,6-trinitrotoluene (TNT)	Chlorobenzene	Metolachlor ethane sulfonic acid (ESA)	Xylenes
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)	Chloroethane	Metolachlor oxanilic acid (OA)	
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)	Chloromethane	Metribuzin	
2,2',4,4',5,5'-hexabromobiphenyl (HBB)	Chromium	Molinate	