

Drinking Water Analysis SUMMARY 2019

Drinking Water Analysis Summary for all Plants and Distribution for January 1 to December 31, 2019

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Microbiological Parameters										
E. coli - Presence/Absence			A	1/01 - 12/31	12083		0	Absent	Absent	100.00% Absent
E. coli - membrane filtration	CFU/100mL			1/01 - 12/31	716		1	22	0	0.03
Heterotrophic Plate Count	CFU/mL			1/01 - 12/31	12046		2347	5700	0	8
Total Coliform - Presence/Absence			A	1/01 - 12/31	12083		89	Present	Absent	99.3% Absent
Total Coliform - membrane filtration	CFU/100mL			1/01 - 12/31	716		133	200	0	2.4
Microcystin	µg/L		1.5	1/01 - 12/31	96	0.10	0	0	0	0
Operational Parameters										
Aluminum	mg/L	0.1		1/01 - 12/31	267	0.01	267	0.148	0.011	0.042
Fluoride	mg/L		1.5	1/01 - 12/31	1423	0.10	1423	0.97	0.23	0.65
Total Chlorine residual (Chloramines)	mg/L		3.0	1/01 - 12/31	7343	0.1	7339	2.5	0	1.68
Turbidity (Distribution only)	NTU	5		1/01 - 12/31	7306	0.1	6421	14.8	0	0.32
General Chemical and Physical Parameters										
Alkalinity	mg/L	30-500		1/01 - 12/31	107	1.6	107	95.1	83.3	89.3
Colour	T.C.U.	5		1/01 - 12/31	45		45	1	1	1
Conductivity	µmhos/cm			1/01 - 12/31	88	1.5	88	388	305	323
Hardness (as CaCO ₃ - calculated)	mg/L	80-100		1/01 - 12/31	86	1	86	136	111	127
pH		6.5-8.5		1/01 - 12/31	1069		1069	7.9	7.2	7.5
TOC	mg/L	5		1/01 - 12/31	37	1.0	37	2.5	1.4	2.0
Dissolved Solids (calculated)	mg/L	500		1/01 - 12/31	87	0.13	87	250	200	210
Inorganic Parameters										
Antimony	mg/L		0.006	1/01 - 12/31	19	0.00003	19	0.00030	0.00017	0.00019
Arsenic	mg/L		0.010	1/01 - 12/31	19	0.00005	19	0.0009	0.0005	0.0007
Barium	mg/L		1.0	1/01 - 12/31	19	0.0005	19	0.024	0.019	0.022
Beryllium	mg/L			1/01 - 12/31	19	0.00005	0	0	0	0
Boron	mg/L		5.0	1/01 - 12/31	24	0.005	24	0.024	0.022	0.023
Cadmium	mg/L		0.005	1/01 - 12/31	19	0.00001	7	0.00002	0	0.000005
Caesium	mg/L			1/01 - 12/31	19	0.00001	1	0.00003	0	0.000002
Calcium	mg/L			1/01 - 12/31	86	0.2	86	38.0	31.1	35.6
Chloride	mg/L	250		1/01 - 12/31	86	0.2	86	51.5	23.0	28.3
Chromium	mg/L		0.05	1/01 - 12/31	19	0.0002	16	0.0004	0	0.0002

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Cobalt	mg/L			1/01 - 12/31	19	0.00001	5	0.00010	0	0.00003
Copper	mg/L	1		1/01 - 12/31	228	0.0008	226	0.187	0	0.0101
Cyanide (Free)	mg/L		0.2	1/01 - 12/31	16	0.003	0	0	0	0
Iron	mg/L	0.3		1/01 - 12/31	162	0.01	111	1.17	0	0.063
Lead	mg/L		0.010	1/01 - 12/31	228	0.00005	135	0.0094	0	0.0004
Magnesium	mg/L			1/01 - 12/31	84	0.1	84	10.0	8.2	9.3
Manganese	mg/L	0.05		1/01 - 12/31	19	0.0005	0	0	0	0
Mercury	mg/L		0.001	1/01 - 12/31	16	0.00005	0	0	0	0
Molybdenum	mg/L			1/01 - 12/31	19	0.00003	19	0.0013	0.0012	0.0012
Nickel	mg/L			1/01 - 12/31	19	0.0002	18	0.0007	0	0.0005
Nitrate	mg/L		10.0	1/01 - 12/31	86	0.01	86	0.50	0.19	0.37
Nitrite	mg/L		1.0	1/01 - 12/31	86	0.002	21	0.006	0	0.0007
Orthophosphate	mg/L			1/01 - 12/31	1543	0.50	1540	7.4	0	1.8
Potassium	mg/L			1/01 - 12/31	86	0.05	86	1.8	1.4	1.5
Selenium	mg/L		0.01	1/01 - 12/31	19	0.0005	2	0.0007	0	0.00006
Silver	mg/L			1/01 - 12/31	19	0.00001	3	0.00002	0	0.000003
Sodium	mg/L	200		1/01 - 12/31	124	0.4	124	27.3	12.5	15.2
Strontium	mg/L			1/01 - 12/31	19	0.003	19	0.184	0.173	0.177
Sulphate	mg/L	500		1/01 - 12/31	86	0.2	86	28.7	22.4	24.8
Terbium	mg/L			1/01 - 12/31	19	0.00005	0	0	0	0
Thallium	mg/L			1/01 - 12/31	19	0.00005	0	0	0	0
Thorium	mg/L			1/01 - 12/31	8	0.00005	4	0.0002	0	0.00005
Tin	mg/L			1/01 - 12/31	19	0.0005	1	0.0069	0	0.00036
Titanium	mg/L			1/01 - 12/31	19	0.0002	19	0.0016	0.0007	0.0010
Tungsten	mg/L			1/01 - 12/31	19	0.00005	18	0.0002	0	0.0001
Uranium	mg/L		0.02	1/01 - 12/31	19	0.00005	19	0.0004	0.0002	0.0003
Vanadium	mg/L			1/01 - 12/31	19	0.00005	19	0.0003	0.0002	0.0002
Zinc	mg/L	5		1/01 - 12/31	27	0.01	1	0.02	0	0.001

Disinfection Byproducts – Trihalomethanes

Bromodichloromethane	µg/L			1/01 - 12/31	70	0.2	70	6.1	1.6	3.4
Bromoform	µg/L			1/01 - 12/31	70	0.2	46	0.7	0	0.22
Chloroform	µg/L			1/01 - 12/31	70	0.2	70	7.0	1.5	4.0
Dibromochloromethane	µg/L			1/01 - 12/31	70	0.2	70	4.1	1.3	2.3
THM (total)	µg/L		100	1/01 - 12/31	70	0.2	70	16.5	4.6	10.0
THM (total - end of line)	µg/L		100	1/01 - 12/31	12	0.2	12	14.1	6.1	11.0

Disinfection Byproducts- Haloacetic acids

Bromoacetic acid	µg/L			1/01 - 12/31	52	0.9	0	0	0	0
Bromochloroacetic acid	µg/L			1/01 - 12/31	52	1.0	47	2.9	0	1.4
Chloroacetic acid	µg/L			1/01 - 12/31	52	2.0	0	0	0	0
Dibromoacetic acid	µg/L			1/01 - 12/31	52	1.20	2	1.5	0	0.05
Dichloroacetic acid	µg/L			1/01 - 12/31	52	0.5	52	6.6	0.7	2.0
HAA-5 (total)	µg/L		80	1/01 - 12/31	52	2.0	45	10.6	0	3.3
Trichloroacetic acid	µg/L			1/01 - 12/31	52	0.55	47	4.0	0	1.5

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Disinfection Byproducts – Other										
1,1,1-Trichloro-2-propanone	µg/L			1/01 - 12/31	12	0.50	0	0	0	0
1,1-Dichloro-2-propanone	µg/L			1/01 - 12/31	12	0.50	0	0	0	0
Bromate	mg/L		0.01	1/01 - 12/31	26	0.003	1	0.003	0	0.0001
Bromochloroacetonitrile	µg/L			1/01 - 12/31	12	0.50	5	0.7	0	0.3
Chloropicrin	µg/L			1/01 - 12/31	12	0.50	0	0	0	0
Dibromoacetonitrile	µg/L			1/01 - 12/31	12	0.50	4	0.7	0	0.2
Dichloroacetonitrile	µg/L			1/01 - 12/31	12	0.50	3	0.8	0	0.2
Trichloroacetonitrile	µg/L			1/01 - 12/31	12	0.50	0	0	0	0
Organic Parameters										
1,1,1-Trichloroethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,1,2,2-Tetrachloroethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,1,2-Trichloroethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,1-Dichloroethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,1-Dichloroethylene	µg/L		14	1/01 - 12/31	70	0.20	0	0	0	0
1,2-Dibromoethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,2-Dichlorobenzene	µg/L	3	200	1/01 - 12/31	70	0.20	0	0	0	0
1,2-Dichloroethane	µg/L		5	1/01 - 12/31	70	0.20	0	0	0	0
1,2-Dichloropropane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,3-Dichlorobenzene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
1,4-Dichlorobenzene	µg/L	1	5	1/01 - 12/31	70	0.20	0	0	0	0
2,3,4,6-Tetrachloroanisole	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2,3,4,6-Tetrachlorophenol	µg/L	1	100	1/01 - 12/31	8	0.30	0	0	0	0
2,3,6-Trichloroanisole	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2,4,6-Trichlorophenol	µg/L	2	5	1/01 - 12/31	8	0.28	0	0	0	0
2,4,6-Trichloroanisole	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2,4-Dichloroanisole	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2,4-Dichlorophenol	µg/L	0.3	900	1/01 - 12/31	8	0.16	0	0	0	0
2-Isobutyl-3-methoxypyrazine	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2-Isopropyl-3-methoxypyrazine	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
2-Methylisoborneol(MIB)	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
Benzene	µg/L		5	1/01 - 12/31	70	0.10	0	0	0	0
Benzo(a)pyrene	µg/L		0.01	1/01 - 12/31	16	0.01	0	0	0	0
Bromomethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Carbon Tetrachloride	µg/L		5	1/01 - 12/31	70	0.20	0	0	0	0
Chlorobenzene	µg/L	30	80	1/01 - 12/31	70	0.20	0	0	0	0
Chloroethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Chloromethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
cis-1,2-Dichloroethylene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
cis-1,3-Dichloropropene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Dichlorodifluoromethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Dichloromethane(Methylene Chloride)	µg/L		50	1/01 - 12/31	70	0.30	16	2.4	0	0.2
Ethylbenzene	µg/L	2.4		1/01 - 12/31	70	0.20	0	0	0	0
Geosmin	µg/L			1/01 - 12/31	46	0.01	0	0	0	0
m- & p-Xylene	µg/L			1/01 - 12/31	70	0.30	0	0	0	0
NDMA	µg/L		0.009	1/01 - 12/31	16	0.0005	16	0.0079	0.0012	0.0035

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
o-Xylene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Pentachlorophenol	µg/L	30	60	1/01 - 12/31	8	0.11	0	0	0	0
Styrene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Tetrachloroethylene	µg/L		10	1/01 - 12/31	70	0.20	0	0	0	0
Toluene	µg/L	24	60	1/01 - 12/31	70	0.20	0	0	0	0
trans-1,2-Dichloroethylene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
trans-1,3-Dichloropropylene	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Trichloroethylene	µg/L		5	1/01 - 12/31	70	0.20	0	0	0	0
Trichlorofluoromethane	µg/L			1/01 - 12/31	70	0.20	0	0	0	0
Vinyl Chloride	µg/L		1	1/01 - 12/31	70	0.10	0	0	0	0
Xylenes (total) calculated	µg/L	300	90	1/01 - 12/31	70	0.30	0	0	0	0

Pesticides

2,4-D	µg/L		100	1/01 - 12/31	8	0.0279	0	0	0	0
Alachlor	µg/L		5	1/01 - 12/31	12	0.0004	0	0	0	0
Atrazine	µg/L			1/01 - 12/31	12	0.0003	12	0.0504	0.0299	0.0438
Atrazine + N-dealkylated metabolites	µg/L		5	1/01 - 12/31	12	0.0013	12	0.1060	0.0610	0.0897
Azinphos Methyl (Guthion)	µg/L		20	1/01 - 12/31	8	0.0008	0	0	0	0
Bromoxynil	µg/L		5	1/01 - 12/31	8	0.07484	0	0	0	0
Carbaryl	µg/L		90	1/01 - 12/31	12	0.0014	1	0.006	0	0.0005
Carbofuran	µg/L		90	1/01 - 12/31	12	0.0023	0	0	0	0
Chlorpyrifos (Dursban)	µg/L		90	1/01 - 12/31	8	0.0057	0	0	0	0
Des-ethyl atrazine	µg/L			1/01 - 12/31	12	0.0021	12	0.0560	0.0293	0.0459
Diazinon	µg/L		20	1/01 - 12/31	12	0.0004	0	0	0	0
Dicamba	µg/L		120	1/01 - 12/31	8	0.0456	0	0	0	0
Diclofop-methyl	µg/L		9	1/01 - 12/31	8	0.3843	0	0	0	0
Dimethoate	µg/L		20	1/01 - 12/31	12	0.0008	0	0	0	0
Diquat	µg/L		70	1/01 - 12/31	4	1.0	0	0	0	0
Diuron	µg/L		150	1/01 - 12/31	8	0.0009	0	0	0	0
Glyphosate	µg/L		280	1/01 - 12/31	4	25	0	0	0	0
Malathion	µg/L		190	1/01 - 12/31	8	0.0003	0	0	0	0
MCPA (2-methyl-4-chlorophenoxyacetic acid)	µg/L		100	1/01 - 12/31	4	0.01	0	0	0	0
Metolachlor	µg/L		50	1/01 - 12/31	12	0.0003	12	0.0101	0.0019	0.0065
Metribuzin (Sencor)	µg/L		80	1/01 - 12/31	12	0.0006	0	0	0	0
Paraquat	µg/L		10	1/01 - 12/31	4	1.0	0	0	0	0
PCBs	µg/L		3	1/01 - 12/31	16	0.3	0	0	0	0
Phorate	µg/L		2	1/01 - 12/31	8	0.0087	0	0	0	0
Picloram	µg/L		190	1/01 - 12/31	8	0.1037	1	0.258	0	0.0323
Prometryne	µg/L		1	1/01 - 12/31	12	0.00026	0	0	0	0
Simazine	µg/L		10	1/01 - 12/31	12	0.0004	12	0.0055	0.0018	0.0040
Terbufos	µg/L		1	1/01 - 12/31	8	0.0054	0	0	0	0
Triallate	µg/L		230	1/01 - 12/31	12	0.0104	0	0	0	0
Trifluralin	µg/L		45	1/01 - 12/31	8	0.2623	0	0	0	0
Triallate	µg/L		230	1/01 - 12/31	12	0.0104	0	0	0	0

Radiation Monitoring

Tritium	Bq/L		7000.0	01/06/19 - 01/04/20	199	10	104	14	0	5.6
---------	------	--	--------	---------------------	-----	----	-----	----	---	-----

Notes:

Microbiological P/A samples include Water Treatment Plants treated water samples, Distribution samples, as well as samples collected after Water main repair work, Water Quality Inquiry
Microbiological analysis for resamples and vicinities is conducted using the Membrane Filtration technique.

Chlorine residual values are for distribution system only

Where standards are based on sums of components, the following calculations are used:

Atrazine + N-dealkylated metabolites = Atrazine + Desethylatrazine

HAA5 (total) = Bromoacetic acid + Chloroacetic acid + Dibromoacetic acid + Dichloroacetic acid + Trichloroacetic acid

PCB total = Arochlor 1232 + 1242 + 1248 + 1254 + 1260 + 1262

THM (total) = Bromodichloromethane + Bromoform + Chloroform + Dibromochloromethane

Xylenes (total) = m- & p-Xylene + o-Xylene

MCPA = 2-methyl-4-chlorophenoxyacetic acid

Radiation analysis data provided by the Ministry of Labour Radiation Protection Services Laboratory. Only Tritium data available at this time.

Total chlorine residual is mostly in the form of Monochloramines

All results below reporting limit are recorded as zero in this report

AO/OG - Aesthetic Objective/Operational Guideline

MAC/IMAC - Maximum Acceptable Concentration/Interim Maximum Acceptable Concentration

P/A = Presence / Absence

mg/L - milligrams per litre

µg/L - micrograms per litre

Bq/L - Becquerel per litre

TCU - True Colour Unit

NTU - Nephelometric Turbidity Unit

CFU - Colony forming unit

µmhos/cm - Micromhos per centimeter

< - Less than