

# Drinking Water Analysis SUMMARY 2018

Drinking Water Analysis Summary for All Plants and Distribution for January 01 to December 31, 2018

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Microbiological Parameters</b>										
E. coli - Presence/Absence			A	1/01 - 12/31	11936		0	Absent	Absent	100.00% Absent
Ecoli - membrane filtration	CFU/100mL			1/01 - 12/31	168		0	0	0	0
Heterotrophic Plate Count	CFU/mL			1/01 - 12/31	11963		1529	7300	0	0.3
Total Coliform - Presence/Absence			A	1/01 - 12/31	11936		36	Present	Absent	99.7% Absent
Total Coliform - membrane filtration	CFU/100mL			1/01 - 12/31	168		10	4	0	0.1
Microcystin	µg/L		1.5	1/01 - 12/31	107	0.10	1	0.11	0	0.001
<b>Operational Parameters</b>										
Aluminum	mg/L	0.1		1/01 - 12/31	306	0.01	304	1.99	0	0.039
Fluoride	mg/L		1.5	1/01 - 12/31	1545	0.10	1545	1.05	0.21	0.66
Total Chlorine residual (Chloramines)	mg/L		3.0	1/01 - 12/31	6468	0.1	6466	2.5	0	1.69
Turbidity (Distribution only)	NTU	5		1/01 - 12/31	6408	0.1	6097	18.6	0	0.40
<b>General Chemical and Physical Parameters</b>										
Alkalinity	mg/L	30-500		1/01 - 12/31	116	1.6	116	96.5	82.7	90.3
Colour	T.C.U.	5		1/01 - 12/31	48		48	1	1	1
Conductivity	µmhos/cm			1/01 - 12/31	104	1.5	104	366	289	322
Hardness ( as CaCO3 - calculated )	mg/L	80-100		1/01 - 12/31	110	1	110	133	121	128
pH		6.5-8.5		1/01 - 12/31	1222		1222	8.5	6.9	7.6
TOC	mg/L	5		1/01 - 12/31	64	1.0	64	2.7	1.5	2.1
Dissolved Solids (calculated)	mg/L	500		1/01 - 12/31	96	0.13	96	240	190	209
<b>Inorganic Parameters</b>										
Antimony	mg/L		0.006	1/01 - 12/31	40	0.00003	40	0.00040	0.00020	0.00021
Arsenic	mg/L		0.010	1/01 - 12/31	40	0.00005	40	0.0011	0.0004	0.0007
Barium	mg/L		1.0	1/01 - 12/31	40	0.0005	40	0.024	0.002	0.022
Beryllium	mg/L			1/01 - 12/31	40	0.00005	0	0	0	0
Boron	mg/L		5.0	1/01 - 12/31	40	0.005	40	0.026	0.013	0.024
Cadmium	mg/L		0.005	1/01 - 12/31	40	0.00001	14	0.00010	0	0.000006
Caesium	mg/L			1/01 - 12/31	40	0.00001	1	0.00002	0	0.000001
Calcium	mg/L			1/01 - 12/31	110	0.2	110	38.0	33.5	36.0
Chloride	mg/L	250		1/01 - 12/31	107	0.2	107	41.5	23.8	27.9
Chromium	mg/L		0.05	1/01 - 12/31	40	0.0002	40	0.0009	0.0002	0.0006

	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	40	0.00001	4	0.00001	0	0.000001
Copper	mg/L	1		1/01 - 12/31	272	0.0008	267	0.1560	0	0.0123
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	231	0.01	181	1.740	0	0.063
Lead	mg/L		0.010	1/01 - 12/31	323	0.00005	154	0.036	0	0.0005
Magnesium	mg/L			1/01 - 12/31	110	0.1	110	9.5	8.9	9.1
Manganese	mg/L	0.05		1/01 - 12/31	40	0.0005	10	0.0013	0	0.0002
Mercury	mg/L		0.001	1/01 - 12/31	19	0.00003	0	0	0	0
Molybdenum	mg/L			1/01 - 12/31	40	0.00003	40	0.0294	0.0010	0.0019
Nickel	mg/L			1/01 - 12/31	40	0.0002	40	0.0018	0.0002	0.0005
Nitrate	mg/L		10.0	1/01 - 12/31	107	0.01	107	0.55	0.15	0.39
Nitrite	mg/L		1.0	1/01 - 12/31	107	0.002	14	0.0040	0	0.0004
Orthophosphate	mg/L			1/01 - 12/31	1556	0.5	1554	4.5	0	2.2
Potassium	mg/L			1/01 - 12/31	107	0.05	107	1.7	1.5	1.6
Selenium	mg/L		0.01	1/01 - 12/31	40	0.0005	10	0.0006	0	0.00014
Silver	mg/L			1/01 - 12/31	40	0.00001	0	0	0	0
Sodium	mg/L	200		1/01 - 12/31	163	0.4	163	27.3	12.4	15.1
Strontium	mg/L			1/01 - 12/31	40	0.003	40	0.192	0.175	0.183
Sulphate	mg/L	500		1/01 - 12/31	107	0.2	107	28.3	20.7	25.1
Terbium	mg/L			1/01 - 12/31	40	0.00005	0	0	0	0
Thallium	mg/L			1/01 - 12/31	40	0.00005	0	0	0	0
Thorium	mg/L			1/01 - 12/31	11	0.00005	3	0.0001	0	0.00002
Tin	mg/L			1/01 - 12/31	40	0.0005	1	0.0006	0	0.00001
Titanium	mg/L			1/01 - 12/31	40	0.0002	40	0.0027	0.0013	0.0019
Tungsten	mg/L			1/01 - 12/31	40	0.00005	40	0.0002	0.0001	0.0001
Uranium	mg/L		0.02	1/01 - 12/31	40	0.00005	40	0.0004	0.0002	0.0003
Vanadium	mg/L			1/01 - 12/31	40	0.00005	40	0.0004	0.0001	0.0003
Zinc	mg/L	5		1/01 - 12/31	40	0.01	2	0.02	0	0.001

#### Disinfection Byproducts – Trihalomethanes

Bromodichloromethane	µg/L			1/01 - 12/31	72	0.2	72	7.2	1.2	3.5
Bromoform	µg/L			1/01 - 12/31	72	0.2	53	0.7	0	0.26
Chloroform	µg/L			1/01 - 12/31	72	0.2	72	10.0	1.3	4.0
Dibromochloromethane	µg/L			1/01 - 12/31	72	0.2	72	4.1	1.1	2.3
THM (total)	µg/L		100	1/01 - 12/31	72	0.2	72	21.9	3.8	10.0
THM (total - end of line)	µg/L		100	1/01 - 12/31	13	0.2	13	17.2	4.7	10.4

#### Disinfection Byproducts- Haloacetic acids

Bromoacetic acid	µg/L			1/01 - 12/31	59	0.9	0	0	0	0
Bromochloroacetic acid	µg/L			1/01 - 12/31	59	1.0	43	3.0	0	1.3
Chloroacetic acid	µg/L			1/01 - 12/31	59	2.0	0	0	0	0
Dibromoacetic acid	µg/L			1/01 - 12/31	59	1.20	2	1.8	0	0.05
Dichloroacetic acid	µg/L			1/01 - 12/31	59	0.5	59	4.5	0.5	2.0
HAA-5 (total)	µg/L			1/01 - 12/31	59	2.0	44	8.5	0	2.9
Trichloroacetic acid	µg/L			1/01 - 12/31	59	0.55	45	2.9	0	1.1

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Disinfection Byproducts – Other</b>										
1,1,1-Trichloro-2-propanone	µg/L			1/01 - 12/31	16	0.5	4	0.6	0	0.1
1,1-Dichloro-2-propanone	µg/L			1/01 - 12/31	16	0.5	0	0	0	0
Bromate	mg/L		0.01	1/01 - 12/31	24	0.003	3	0.006	0	0.0005
Bromochloroacetonitrile	µg/L			1/01 - 12/31	16	0.5	7	0.7	0	0.3
Chloropicrin	µg/L			1/01 - 12/31	16	0.5	0	0	0	0
Dibromoacetonitrile	µg/L			1/01 - 12/31	16	0.5	2	0.5	0	0.1
Dichloroacetonitrile	µg/L			1/01 - 12/31	16	0.5	4	0.7	0	0.2
Trichloroacetonitrile	µg/L			1/01 - 12/31	16	0.5	0	0	0	0
<b>Organic Parameters</b>										
1,1,1-Trichloroethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,1,2,2-Tetrachloroethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,1,2-Trichloroethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,1-Dichloroethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,1-Dichloroethylene	µg/L		14	1/01 - 12/31	72	0.2	0	0	0	0
1,2-Dibromoethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,2-Dichlorobenzene	µg/L	3	200	1/01 - 12/31	72	0.2	0	0	0	0
1,2-Dichloroethane	µg/L		5	1/01 - 12/31	72	0.2	0	0	0	0
1,2-Dichloropropane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,3-Dichlorobenzene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
1,4-Dichlorobenzene	µg/L	1	5	1/01 - 12/31	72	0.2	0	0	0	0
2,3,4,6-Tetrachloroanisole	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2,3,4,6-Tetrachlorophenol	µg/L	1	100	1/01 - 12/31	14	0.2514	0	0	0	0
2,3,6-Trichloroanisole	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2,4,6-Trichlorophenol	µg/L	2	5	1/01 - 12/31	14	0.2763	0	0	0	0
2,4,6-Trichloroanisole	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2,4-Dichloroanisole	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2,4-Dichlorophenol	µg/L	0.3	900	1/01 - 12/31	14	0.1131	0	0	0	0
2-Isobutyl-3-methoxypyrazine	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2-Isopropyl-3-methoxypyrazine	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
2-Methylisoborneol(MIB)	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
Benzene	µg/L		1	1/01 - 12/31	72	0.1	0	0	0	0
Benzo(a)pyrene	µg/L		0.01	1/01 - 12/31	12	0.01	0	0	0	0
Bromomethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Carbon Tetrachloride	µg/L		2	1/01 - 12/31	72	0.2	0	0	0	0
Chlorobenzene	µg/L	30	80	1/01 - 12/31	72	0.2	0	0	0	0
Chloroethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Chloromethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
cis-1,2-Dichloroethylene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
cis-1,3-Dichloropropene	µg/L			1/01 - 12/31	66	0.2	0	0	0	0
Dichlorodifluoromethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Dichloromethane(Methylene Chloride)	µg/L		50	1/01 - 12/31	66	0.3	7	2.4	0	0.2
Ethylbenzene	µg/L	2.4		1/01 - 12/31	72	0.2	0	0	0	0
Geosmin	µg/L			1/01 - 12/31	48	0.006	0	0	0	0
m- & p-Xylene	µg/L			1/01 - 12/31	72	0.3	0	0	0	0

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
NDMA	µg/L		0.009	1/01 - 12/31	18	0.0008	16	0.0120	0	0.0037
o-Xylene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Pentachlorophenol	µg/L	30	60	1/01 - 12/31	14	0.1051	0	0	0	0
Styrene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Tetrachloroethylene	µg/L		10	1/01 - 12/31	72	0.2	0	0	0	0
Toluene	µg/L	24	60	1/01 - 12/31	72	0.2	0	0	0	0
trans-1,2-Dichloroethylene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
trans-1,3-Dichloropropylene	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Trichloroethylene	µg/L		5	1/01 - 12/31	72	0.2	0	0	0	0
Trichlorofluoromethane	µg/L			1/01 - 12/31	72	0.2	0	0	0	0
Vinyl Chloride	µg/L		1	1/01 - 12/31	72	0.1	0	0	0	0
Xylenes ( total) calculated	µg/L	300	90	1/01 - 12/31	72	0.3	0	0	0	0
<b>Pesticides</b>										
2,4-D	µg/L		100	1/01 - 12/31	14	0.0100	0	0	0	0
Alachlor	µg/L		5	1/01 - 12/31	14	0.0004	0	0	0	0
Aminomethyl phosphonic acid (AMPA)	µg/L			1/01 - 12/31	4	12.5	0	0	0	0
Atrazine	µg/L			1/01 - 12/31	14	0.0003	14	0.0668	0.0291	0.0526
Atrazine + N-dealkylated metabolites	µg/L		5	1/01 - 12/31	14	0.0013	14	0.1320	0.0640	0.1082
Azinphos Methyl (Guthion)	µg/L		20	1/01 - 12/31	14	0.0008	0	0	0	0
Bromoxynil	µg/L		5	1/01 - 12/31	14	0.0189	0	0	0	0
Caffeine	µg/L			1/01 - 12/31	8	0.0015	3	0.0311	0	0.0099
Carbaryl	µg/L		90	1/01 - 12/31	14	0.0014	0	0	0	0
Carbofuran	µg/L		90	1/01 - 12/31	14	0.0023	0	0	0	0
Chlorpyrifos (Dursban)	µg/L		90	1/01 - 12/31	14	0.0057	0	0	0	0
Des-ethyl atrazine	µg/L			1/01 - 12/31	14	0.0021	14	0.0649	0.0355	0.0558
Diazinon	µg/L		20	1/01 - 12/31	14	0.0004	0	0	0	0
Dicamba	µg/L		120	1/01 - 12/31	14	0.0417	0	0	0	0
Diclofop-methyl	µg/L		9	1/01 - 12/31	14	0.0602	0	0	0	0
Dimethoate	µg/L		20	1/01 - 12/31	14	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	14	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	14	0.0003	0	0	0	0
MCPA	µg/L		100	1/01 - 12/31	17	0.0015	1	0.0024	0	0.0001
Metolachlor	µg/L		50	1/01 - 12/31	14	0.0003	14	0.0090	0.0024	0.0067
Metribuzin (Sencor)	µg/L		80	1/01 - 12/31	14	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	0.4	0	0	0	0
Phorate	µg/L		2	1/01 - 12/31	14	0.0087	0	0	0	0
Picloram	µg/L		190	1/01 - 12/31	14	0.1037	8	1.220	0	0.5279
Prometryne	µg/L		1	1/01 - 12/31	14	0.0002	0	0	0	0
Simazine	µg/L		10	1/01 - 12/31	14	0.0004	14	0.0058	0.0018	0.0046
Terbufos	µg/L		1	1/01 - 12/31	14	0.0054	0	0	0	0
Triallate	µg/L		230	1/01 - 12/31	14	0.0104	0	0	0	0
Trifluralin	µg/L		45	1/01 - 12/31	14	0.2623	0	0	0	0

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Radiation Monitoring</b>										
Tritium	Bq/L		7000.0	01/07/18 - 12/01/18	184	5	56	10.0	0	1.9
Cesium-134	Bq/L		7.0	12/31//17 - 12//29/18	12	0.3	0	0	0	0
Cesium-137	Bq/L		10.0	12/31//17 - 12//29/18	12	0.3	0	0	0	0
Cobalt-60	Bq/L		2.0	12/31//17 - 12//29/18	12	0.3	0	0	0	0
Iodine-131	Bq/L		6.0	12/31//17 - 12//29/18	12	0.3	0	0	0	0
Gross Alpha	Bq/L			12/31//17 - 09//29/18	9	0.04	0	0	0	0
Gross Beta	Bq/L			12/31//17 - 09//29/18	9	0.04	9	0.25	0.05	0.08

**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.

Radiation analysis data provided by the Ministry of Labour Radiation Protection Services Laboratory

MCPA = 2-methyl-4-chlorophenoxyacetic acid

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

**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