

Drinking Water Analysis SUMMARY 2020

Drinking Water Analysis Summary for all Plants and Distribution for January 1 to December 31, 2020

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Sampes	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Microbiological Parameters										
E. coli - Presence/Absence			A	1/01 - 12/31	12276		1	Present	Absent	99.99 % Absent
Ecoli - membrane filtration	CFU/100mL			1/01 - 12/31	437		3	11	0	0.04
Heterotrophic Plate Count	CFU/mL			1/01 - 12/31	12695		1784	7909	0	5
Total Coliform - Presence/Absence			A	1/01 - 12/31	12276		60	Present	Absent	99.51 % Absent
Total Coliform - membrane filtration	CFU/100mL			1/01 - 12/31	437		96	198	0	2.7
Microcystin	µg/L		1.5	1/01 - 12/31	96	0.10	1	0.10	0	0.03
Operational Parameters										
Aluminum	mg/L	0.1		1/01 - 12/31	239	0.01	238	46.6	0	0.077
Fluoride	mg/L		1.5	1/01 - 12/31	1468	0.10	1468	0.89	0.23	0.64
Total Chlorine residual (Chloramines)	mg/L		3.0	1/01 - 12/31	7210	0.1	7209	2.5	0	1.69
Turbidity (Distribution only)	NTU	5		1/01 - 12/31	7154	0.1	6190	18.4	0	0.32
General Chemical and Physical Parameters										
Alkalinity	mg/L	30-500		1/01 - 12/31	103	5.0	103	102.0	83.4	91.5
Colour	T.C.U.	5		1/01 - 12/31	47		47	1	1	1
Conductivity	µmhos/cm			1/01 - 12/31	94	1.5	94	414	309	327
Hardness (as CaCO3 - calculated)	mg/L	80-100		1/01 - 12/31	98	1	98	124	113	118
pH		6.5-8.5		1/01 - 12/31	1071		1071	7.9	7.2	7.5
TOC	mg/L	5		1/01 - 12/31	45	1.0	45	2.3	1.1	1.6
Dissolved Solids (calculated)	mg/L	500		1/01 - 12/31	92	3.25	92	270	200	213
Inorganic Parameters										
Antimony	mg/L		0.006	1/01 - 12/31	37	0.0005	10	0.0003	0	0.00007
Arsenic	mg/L		0.010	1/01 - 12/31	37	0.00005	37	0.0689	0.0005	0.0046
Barium	mg/L		1.0	1/01 - 12/31	37	0.0005	37	0.134	0.020	0.029
Beryllium	mg/L			1/01 - 12/31	37	0.00005	1	0.00006	0	0.000002
Boron	mg/L		5.0	1/01 - 12/31	37	0.005	37	0.028	0.021	0.024
Cadmium	mg/L		0.005	1/01 - 12/31	37	0.00001	11	0.00020	0	0.00001
Caesium	mg/L			1/01 - 12/31	37	0.00001	3	0.00002	0	0.000002
Calcium	mg/L			1/01 - 12/31	99	0.2	99	34.9	31.6	33.3
Chloride	mg/L	250		1/01 - 12/31	99	0.2	99	55.2	25.1	29.4
Chromium	mg/L		0.05	1/01 - 12/31	37	0.0002	36	0.0032	0	0.0005

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samps	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Cobalt	mg/L			1/01 - 12/31	37	0.00001	3	0.00011	0	0.00001
Copper	mg/L	1		1/01 - 12/31	83	0.0008	82	0.038	0	0.0058
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	89	0.01	71	1.54	0	0.058
Lead	mg/L		0.010	1/01 - 12/31	58	0.00005	29	0.0052	0	0.0005
Magnesium	mg/L			1/01 - 12/31	99	0.1	99	9.0	8.0	8.5
Manganese	mg/L	0.05		1/01 - 12/31	37	0.0005	12	0.025	0	0.0017
Mercury	mg/L		0.001	1/01 - 12/31	16	0.00005	0	0	0	0
Molybdenum	mg/L			1/01 - 12/31	37	0.00003	37	0.0015	0.0008	0.0012
Nickel	mg/L			1/01 - 12/31	37	0.0002	37	0.0031	0.0004	0.0007
Nitrate	mg/L		10.0	1/01 - 12/31	102	0.01	102	0.59	0.15	0.39
Nitrite	mg/L		1.0	1/01 - 12/31	102	0.00	13	0.004	0	0.0004
Orthophosphate	mg/L			1/01 - 12/31	1576	0.5	1576	3.3	1.0	1.8
Potassium	mg/L			1/01 - 12/31	99	0.05	99	1.8	1.4	1.6
Selenium	mg/L		0.01	1/01 - 12/31	37	0.0005	2	0.0007	0	0.00003
Silver	mg/L			1/01 - 12/31	37	0.00001	0	0	0	0
Sodium	mg/L	200		1/01 - 12/31	137	0.4	137	29.5	11.9	15.4
Strontium	mg/L			1/01 - 12/31	37	0.003	37	0.27	0.17	0.18
Sulphate	mg/L	500		1/01 - 12/31	99	0.2	99	28.0	23.3	25.2
Terbium	mg/L			1/01 - 12/31	37	0.00005	0	0	0	0
Thallium	mg/L			1/01 - 12/31	37	0.00005	0	0	0	0
Tin	mg/L			1/01 - 12/31	37	0.0005	0	0	0	0
Titanium	mg/L			1/01 - 12/31	37	0.0002	37	0.019	0.001	0.002
Tungsten	mg/L			1/01 - 12/31	37	0.00005	37	0.00020	0.00010	0.00013
Uranium	mg/L		0.02	1/01 - 12/31	37	0.00005	37	0.00861	0.00034	0.00083
Vanadium	mg/L			1/01 - 12/31	37	0.00005	37	0.00338	0.00021	0.00042
Zinc	mg/L	5		1/01 - 12/31	37	0.01	3	0.02	0	0.001

Disinfection Byproducts- Trihalomethanes

Bromodichloromethane	µg/L			1/01 - 12/31	0	0.2	0	0	0	0
Bromoform	µg/L			1/01 - 12/31	0	0.2	0	0	0	0
Chloroform	µg/L			1/01 - 12/31	62	0.2	62	6.8	1.3	3.9
Dibromochloromethane	µg/L			1/01 - 12/31	62	0.2	50	0.6	0	0.3
THM (total)	µg/L		100	1/01 - 12/31	62	0.2	62	7.8	1.4	4.1
THM (total - end of line)	µg/L		100	1/01 - 12/31	62	0.2	62	4.2	1.2	2.6

Disinfection Byproducts- Haloacetic Acids

Bromoacetic acid	µg/L			1/01 - 12/31	62	2.0	0	0	0	0
Bromochloroacetic acid	µg/L			1/01 - 12/31	62	1.2	50	2.7	0	1.4
Chloroacetic acid	µg/L			1/01 - 12/31	62	2.0	0	0	0	0
Dibromoacetic acid	µg/L			1/01 - 12/31	62	2.0	1	1.2	0	0.02
Dichloroacetic acid	µg/L			1/01 - 12/31	62	1.0	59	4.0	0	2.0
HAA-5 (total)	µg/L		80	1/01 - 12/31	62	2.0	50	7.2	0	3.0
Trichloroacetic acid	µg/L			1/01 - 12/31	62	0.8	56	3.2	0	1.4

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samps	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Disinfection Byproducts- Other										
1,1,1-Trichloro-2-propanone	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
1,1-Dichloro-2-propanone	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
Bromate	mg/L		0.01	1/01 - 12/31	27	0.003	0	0	0	0
Bromochloroacetonitrile	µg/L			1/01 - 12/31	16	0.50	3	0.6	0	0.1
Chloropicrin	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
Dibromoacetonitrile	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
Dichloroacetonitrile	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
Trichloroacetonitrile	µg/L			1/01 - 12/31	16	0.50	0	0	0	0
Organic Parameters										
1,1,1-Trichloroethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,1,2,2-Tetrachloroethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,1,2-Trichloroethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,1-Dichloroethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,1-Dichloroethylene	µg/L		14	1/01 - 12/31	62	0.2	0	0	0	0
1,2-Dibromoethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,2-Dichlorobenzene	µg/L	3	200	1/01 - 12/31	62	0.2	0	0	0	0
1,2-Dichloroethane	µg/L		5	1/01 - 12/31	62	0.2	0	0	0	0
1,2-Dichloropropane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,3-Dichlorobenzene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
1,4-Dichlorobenzene	µg/L	1	5	1/01 - 12/31	62	0.2	0	0	0	0
2,3,4,6-Tetrachloroanisole	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2,3,4,6-Tetrachlorophenol	µg/L	1	100	1/01 - 12/31	11	1.0	0	0	0	0
2,3,6-Trichloroanisole	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2,4,6-Trichlorophenol	µg/L	2	5	1/01 - 12/31	11	0.5	0	0	0	0
2,4,6-Trichloroanisole	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2,4-Dichloroanisole	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2,4-Dichlorophenol	µg/L	0.3	900	1/01 - 12/31	11	0.5	0	0	0	0
2-Isobutyl-3-methoxypyrazine	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2-Isopropyl-3-methoxypyrazine	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
2-Methylisoborneol(MIB)	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
Benzene	µg/L		5	1/01 - 12/31	62	0.1	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	62	0.2	0	0	0	0
Carbon Tetrachloride	µg/L		5	1/01 - 12/31	62	0.2	0	0	0	0
Chlorobenzene	µg/L	30	80	1/01 - 12/31	62	0.2	0	0	0	0
Chloroethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Chloromethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
cis-1,2-Dichloroethylene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
cis-1,3-Dichloropropene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Dichlorodifluoromethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Dichloromethane(Methylene Chloride)	µg/L		50	1/01 - 12/31	62	0.3	0	0	0	0
Ethylbenzene	µg/L	2.4		1/01 - 12/31	62	0.2	0	0	0	0
Geosmin	µg/L			1/01 - 12/31	16	0.006	0	0	0	0
m- & p-Xylene	µg/L			1/01 - 12/31	62	0.3	0	0	0	0
NDMA	µg/L		0.009	1/01 - 12/31	13	0.0008	13	0.0257	0.0025	0.0057

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samps	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
o-Xylene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Pentachlorophenol	µg/L	30	60	1/01 - 12/31	11	0.5	0	0	0	0
Styrene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Tetrachloroethylene	µg/L		10	1/01 - 12/31	62	0.2	0	0	0	0
Toluene	µg/L	24	60	1/01 - 12/31	62	0.2	0	0	0	0
trans-1,2-Dichloroethylene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
trans-1,3-Dichloropropylene	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Trichloroethylene	µg/L		5	1/01 - 12/31	62	0.2	0	0	0	0
Trichlorofluoromethane	µg/L			1/01 - 12/31	62	0.2	0	0	0	0
Vinyl Chloride	µg/L		1	1/01 - 12/31	62	0.1	0	0	0	0
Xylenes (total) calculated	µg/L	300	90	1/01 - 12/31	62	0.3	0	0	0	0

Pesticides

2,4-D	µg/L		100	1/01 - 12/31	11	0.0280	0	0	0	0
Alachlor	µg/L		5	1/01 - 12/31	11	0.0005	0	0	0	0
Atrazine	µg/L			1/01 - 12/31	11	0.0005	11	0.0475	0.0296	0.0408
Atrazine + N-dealkylated metabolites	µg/L		5	1/01 - 12/31	11	0.0025	11	0.1010	0.0700	0.0886
Azinphos Methyl (Guthion)	µg/L		20	1/01 - 12/31	11	0.001	0	0	0	0
Bromoxynil	µg/L		5	1/01 - 12/31	11	0.075	0	0	0	0
Caffeine	µg/L			1/01 - 12/31	8	0.020	0	0	0	0
Carbaryl	µg/L		90	1/01 - 12/31	12	0.0015	0	0	0	0
Carbofuran	µg/L		90	1/01 - 12/31	12	0.0025	0	0	0	0
Chlorpyrifos (Dursban)	µg/L		90	1/01 - 12/31	11	0.01	0	0	0	0
Des-ethyl atrazine	µg/L			1/01 - 12/31	11	0.0025	11	0.0529	0.0367	0.0475
Diazinon	µg/L		20	1/01 - 12/31	11	0.0005	0	0	0	0
Dicamba	µg/L		120	1/01 - 12/31	11	0.2	0	0	0	0
Diclofop-methyl	µg/L		9	1/01 - 12/31	11	0.5	0	0	0	0
Dimethoate	µg/L		20	1/01 - 12/31	11	0.001	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	11	0.001	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	11	0.001	0	0	0	0
MCPA (2-methyl-4-chlorophenoxyacetic acid)	µg/L		100	1/01 - 12/31	4	0.2	0	0	0	0
Metolachlor	µg/L		50	1/01 - 12/31	11	0.001	11	0.008	0.003	0.007
Metribuzin (Sencor)	µg/L		80	1/01 - 12/31	11	0.001	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	11	0.01	0	0	0	0
Picloram	µg/L		190	1/01 - 12/31	11	0.3	0	0	0	0
Prometryne	µg/L		1	1/01 - 12/31	11	0.0005	0	0	0	0
Simazine	µg/L		10	1/01 - 12/31	11	0.001	11	0.005	0.002	0.004
Terbufos	µg/L		1	1/01 - 12/31	11	0.006	0	0	0	0
Triallate	µg/L		230	1/01 - 12/31	12	0.01	0	0	0	0
Trifluralin	µg/L		45	1/01 - 12/31	11	0.265	0	0	0	0

Radiation Monitoring

Tritium	Bq/L		7000.0	01/05/20 - 12/27/20	198	10	97	14	0	5.4
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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

Total chlorine residual is mostly in the form of Monochloramines

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

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