

Drinking Water Analysis SUMMARY 2021

Drinking Water Analysis Summary for all Plants and Distribution for January 1 to December 31, 2021

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samps	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Microbiological Parameters										
<i>E. coli</i> - Presence/Absence			A	1/01 - 12/31	12228		1	Present	Absent	99.99 % Absent
Ecoli - membrane filtration	CFU/100mL			1/01 - 12/31	330		0	0	0	0
Heterotrophic Plate Count	CFU/mL			1/01 - 12/31	12542		1227	5000	0	4.8
Total Coliform - Presence/Absence			A	1/01 - 12/31	12228		77	Present	Absent	99.37 % Absent
Total Coliform - membrane filtration	CFU/100mL			1/01 - 12/31	330		52	110	0	1.5
Microcystin	µg/L		1.5	1/01 - 12/31	92	0.10	0	0	0	0
Operational Parameters										
Aluminum	mg/L	0.1		1/01 - 12/31	210	0.01	210	0.10	0.01	0.03
Fluoride	mg/L		1.5	1/01 - 12/31	1477	0.10	1477	0.79	0.13	0.63
Total Chlorine residual (Chloramines)	mg/L		3.0	1/01 - 12/31	7178	0.1	7177	2.5	0	1.7
Turbidity (Distribution only)	NTU	5		1/01 - 12/31	7127	0.1	6145	5.1	0	0.3
General Chemical and Physical Parameters										
Alkalinity	mg/L	30-500		1/01 - 12/31	110	5.0	110	105.7	84.9	91.3
Colour	T.C.U.	5		1/01 - 12/31	43		43	1	1	1
Conductivity	µmhos/cm			1/01 - 12/31	94	1.5	94	369	308	331
Hardness (as CaCO3 - calculated)	mg/L	80-100		1/01 - 12/31	102	1	102	123	112	117
pH		6.5-8.5		1/01 - 12/31	987		987	7.8	7.3	7.5
TOC	mg/L	5		1/01 - 12/31	45	1.0	45	2.1	1.5	1.8
Dissolved Solids (calculated)	mg/L	500		1/01 - 12/31	94	3.25	94	240	200	215
Inorganic Parameters										
Antimony	mg/L		0.006	1/01 - 12/31	20	0.0005	2	0.0007	0	0.0001
Arsenic	mg/L		0.01	1/01 - 12/31	21	0.00005	21	0.00098	0.00039	0.00074
Barium	mg/L		1.0	1/01 - 12/31	20	0.0005	20	0.028	0.018	0.022
Beryllium	mg/L			1/01 - 12/31	20	0.00005	0	0	0	0
Boron	mg/L		5.0	1/01 - 12/31	20	0.005	20	0.027	0.019	0.023
Cadmium	mg/L		0.005	1/01 - 12/31	20	0.00001	1	0.00002	0	0.000001
Caesium	mg/L			1/01 - 12/31	20	0.00001	4	0.00002	0	0.000003
Calcium	mg/L			1/01 - 12/31	102	0.2	102	34.6	31.3	32.8
Chloride	mg/L	250		1/01 - 12/31	102	0.2	102	39.3	24.2	27.3
Chromium	mg/L		0.05	1/01 - 12/31	20	0.0002	16	0.0005	0	0.0003

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Sampses	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Cobalt	mg/L			1/01 - 12/31	20	0.00001	2	0.00001	0	0.000001
Copper	mg/L	1		1/01 - 12/31	160	0.0008	159	0.40	0	0.0058
Cyanide (Free)	mg/L		0.2	1/01 - 12/31	15	0.003	0	0	0	0
Iron	mg/L	0.3		1/01 - 12/31	62	0.01	59	0.07	0	0.03
Lead	mg/L		0.010	1/01 - 12/31	157	0.00005	118	0.0052	0	0.0005
Magnesium	mg/L			1/01 - 12/31	102	0.1	102	8.9	8.0	8.5
Manganese	mg/L	0.05		1/01 - 12/31	21	0.0005	1	0.0022	0	0.0001
Mercury	mg/L		0.001	1/01 - 12/31	15	0.00005	0	0	0	0
Molybdenum	mg/L			1/01 - 12/31	20	0.00003	20	0.0013	0.0011	0.0012
Nickel	mg/L			1/01 - 12/31	20	0.0002	20	0.0049	0.0005	0.0005
Nitrate	mg/L		10.0	1/01 - 12/31	96	0.01	96	0.56	0.18	0.37
Nitrite	mg/L		1.0	1/01 - 12/31	96	0.002	13	0.003	0	0.0003
Orthophosphate	mg/L			1/01 - 12/31	1480	0.50	1478	5.9	0	1.7
Potassium	mg/L			1/01 - 12/31	96	0.05	96	1.7	1.3	1.5
Selenium	mg/L		0.05	1/01 - 12/31	20	0.0005	0	0	0	0
Silver	mg/L			1/01 - 12/31	20	0.00001	2	0.00002	0	0.000002
Sodium	mg/L	200		1/01 - 12/31	138	0.4	138	23.6	11.6	14.0
Strontium	mg/L			1/01 - 12/31	20	0.003	20	0.186	0.161	0.169
Sulphate	mg/L	500		1/01 - 12/31	96	0.2	96	27.8	21.6	24.7
Terbium	mg/L			1/01 - 12/31	20	0.00005	4	0.00015	0	0.00002
Thallium	mg/L			1/01 - 12/31	20	0.00005	0	0	0	0
Tin	mg/L			1/01 - 12/31	20	0.0005	0	0	0	0
Titanium	mg/L			1/01 - 12/31	20	0.0002	20	0.0016	0.0007	0.0009
Tungsten	mg/L			1/01 - 12/31	20	0.00005	20	0.00030	0.00009	0.00015
Uranium	mg/L		0.02	1/01 - 12/31	20	0.00005	20	0.00041	0.00027	0.00033
Vanadium	mg/L			1/01 - 12/31	20	0.00005	20	0.00030	0.00017	0.00024
Zinc	mg/L	5		1/01 - 12/31	21	0.01	0	0	0	0

Disinfection Byproducts- Trihalomethanes

Bromodichloromethane	µg/L			1/01 - 12/31	69	0.2	69	9.2	0.8	3.4
Bromoform	µg/L			1/01 - 12/31	69	0.2	49	0.6	0	0.2
Chloroform	µg/L			1/01 - 12/31	69	0.2	69	13.0	0.8	4.2
Dibromochloromethane	µg/L			1/01 - 12/31	69	0.2	69	5.8	0.9	2.6
THM (total)	µg/L		100	1/01 - 12/31	69	0.2	69	27.8	3.0	10.5
THM (total - end of line)	µg/L		100	1/01 - 12/31	11	0.2	11	27.8	5.4	11.5

Disinfection Byproducts- Haloacetic Acids

Bromoacetic acid	µg/L			1/01 - 12/31	63	2.0	0	0	0	0
Bromochloroacetic acid	µg/L			1/01 - 12/31	63	1.2	38	3.0	0	1.0
Chloroacetic acid	µg/L			1/01 - 12/31	63	2.0	2	4.1	0	0.11
Dibromoacetic acid	µg/L			1/01 - 12/31	63	2.0	0	0	0	0
Dichloroacetic acid	µg/L			1/01 - 12/31	63	1.0	55	4.7	0	1.8
HAA-5 (total)	µg/L	80		1/01 - 12/31	63	2.0	43	7.9	0	2.9
Trichloroacetic acid	µg/L			1/01 - 12/31	63	0.8	45	3.8	0	1.3

	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	15	0.50	2	0.50	0	0.07
1,1-Dichloro-2-propanone	µg/L			1/01 - 12/31	15	0.50	0	0	0	0
Bromate	mg/L		0.01	1/01 - 12/31	24	0.005	2	0.01	0	0.001
Bromochloroacetonitrile	µg/L			1/01 - 12/31	15	0.50	1	0.50	0	0.03
Chloropicrin	µg/L			1/01 - 12/31	15	0.50	0	0	0	0
Dibromoacetonitrile	µg/L			1/01 - 12/31	15	0.50	0	0	0	0
Dichloroacetonitrile	µg/L			1/01 - 12/31	15	0.50	1	0.50	0	0.03
Trichloroacetonitrile	µg/L			1/01 - 12/31	15	0.50	0	0	0	0
Organic Parameters										
1,1,1-Trichloroethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,1,2,2-Tetrachloroethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,1,2-Trichloroethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,1-Dichloroethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,1-Dichloroethylene	µg/L		14	1/01 - 12/31	69	0.2	0	0	0	0
1,2-Dibromoethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,2-Dichlorobenzene	µg/L	3	200	1/01 - 12/31	69	0.2	0	0	0	0
1,2-Dichloroethane	µg/L		5	1/01 - 12/31	69	0.2	0	0	0	0
1,2-Dichloropropane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,3-Dichlorobenzene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
1,4-Dichlorobenzene	µg/L	1	5	1/01 - 12/31	69	0.2	0	0	0	0
2,3,4,6-Tetrachloroanisole	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2,3,4,6-Tetrachlorophenol	µg/L	1	100	1/01 - 12/31	14	1.0	0	0	0	0
2,3,6-Trichloroanisole	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2,4,6-Trichlorophenol	µg/L	2	5	1/01 - 12/31	14	0.5	0	0	0	0
2,4,6-Trichloroanisole	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2,4-Dichloroanisole	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2,4-Dichlorophenol	µg/L	0.3	900	1/01 - 12/31	14	0.5	0	0	0	0
2-Isobutyl-3-methoxypyrazine	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2-Isopropyl-3-methoxypyrazine	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
2-Methylisoborneol(MIB)	µg/L			1/01 - 12/31	54	0.006	0	0	0	0
Benzene	µg/L		1	1/01 - 12/31	69	0.1	12	0.10	0	0.02
Benzo(a)pyrene	µg/L		0.01	1/01 - 12/31	15	0.01	0	0	0	0
Bromomethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
Carbon Tetrachloride	µg/L		2	1/01 - 12/31	69	0.2	0	0	0	0
Chlorobenzene	µg/L	30	80	1/01 - 12/31	69	0.2	0	0	0	0
Chloroethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
Chloromethane	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
cis-1,2-Dichloroethylene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
cis-1,3-Dichloropropylene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
Dichlorodifluoromethane	µg/L			1/01 - 12/31	67	0.2	0	0	0	0
Dichloromethane(Methylene Chloride)	µg/L		50	1/01 - 12/31	69	0.3	3	2.2	0	0.07
Ethylbenzene	µg/L	2.4	140	1/01 - 12/31	69	0.2	0	0	0	0
Geosmin	µg/L			1/01 - 12/31	54	0.006	8	13.6	0	1.5
m- & p-Xylene	µg/L			1/01 - 12/31	69	0.3	0	0	0	0
NDMA	µg/L		0.009	1/01 - 12/31	13	0.0008	7	0.0643	0	0.0085

	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	69	0.2	0	0	0	0
Pentachlorophenol	µg/L	30	60	1/01 - 12/31	14	0.5	0	0	0	0
Styrene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
Tetrachloroethylene	µg/L		10	1/01 - 12/31	69	0.2	0	0	0	0
Toluene	µg/L	24	60	1/01 - 12/31	69	0.2	0	0	0	0
trans-1,2-Dichloroethylene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
trans-1,3-Dichloropropylene	µg/L			1/01 - 12/31	69	0.2	0	0	0	0
Trichloroethylene	µg/L		5	1/01 - 12/31	69	0.2	0	0	0	0
Trichlorofluoromethane	µg/L			1/01 - 12/31	69	0.2	1	0.20	0	0.003
Vinyl Chloride	µg/L		1	1/01 - 12/31	69	0.1	0	0	0	0
Xylenes (total) calculated	µg/L	300	90	1/01 - 12/31	69	0.3	0	0	0	0
Pesticides										
2,4-D	µg/L		100	1/01 - 12/31	14	0.028	0	0	0	0
Alachlor	µg/L		5	1/01 - 12/31	14	0.0005	0	0	0	0
Atrazine	µg/L			1/01 - 12/31	14	0.0005	14	0.0638	0.0296	0.0450
Atrazine + N-dealkylated metabolites	µg/L		5	1/01 - 12/31	14	0.0025	14	0.1400	0.0700	0.1031
Azinphos Methyl (Guthion)	µg/L		20	1/01 - 12/31	14	0.001	0	0	0	0
Bromoxynil	µg/L		5	1/01 - 12/31	14	0.075	0	0	0	0
Caffeine	µg/L			1/01 - 12/31	7	0.020	1	0.026	0	0.0037
Carbaryl	µg/L		90	1/01 - 12/31	15	0.0015	0	0	0	0
Carbofuran	µg/L		90	1/01 - 12/31	15	0.0025	0	0	0	0
Chlorpyrifos (Dursban)	µg/L		90	1/01 - 12/31	14	0.01	0	0	0	0
Des-ethyl atrazine	µg/L			1/01 - 12/31	14	0.0025	14	0.0878	0.0367	0.0579
Diazinon	µg/L		20	1/01 - 12/31	14	0.0005	0	0	0	0
Dicamba	µg/L		120	1/01 - 12/31	14	0.2	0	0	0	0
Diclofop-methyl	µg/L		9	1/01 - 12/31	14	0.5	0	0	0	0
Dimethoate	µg/L		20	1/01 - 12/31	14	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	14	0.001	1	0.0011	0	0.0001
Glyphosate	µg/L		280	1/01 - 12/31	4	25	0	0	0	0
Malathion	µg/L		190	1/01 - 12/31	14	0.001	0	0	0	0
MCPA (2-methyl-4-chlorophenoxyacetic acid)	µg/L		100	1/01 - 12/31	11	0.2	0	0	0	0
Metolachlor	µg/L		50	1/01 - 12/31	14	0.001	14	0.011	0.003	0.007
Metribuzin (Sencor)	µg/L		80	1/01 - 12/31	14	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	15	0.3	0	0	0	0
Phorate	µg/L		2	1/01 - 12/31	14	0.01	0	0	0	0
Picloram	µg/L		190	1/01 - 12/31	14	0.3	0	0	0	0
Prometryne	µg/L		1	1/01 - 12/31	14	0.0005	0	0	0	0
Simazine	µg/L		10	1/01 - 12/31	14	0.001	14	0.004	0.002	0.003
Terbufos	µg/L		1	1/01 - 12/31	14	0.006	0	0	0	0
Triallate	µg/L		230	1/01 - 12/31	15	0.01	0	0	0	0
Trifluralin	µg/L		45	1/01 - 12/31	14	0.265	0	0	0	0

Notes:

Microbiological P/A samples include Water Treatment Plants treated water samples, Distribution samples, as well as samples collected after Watermain repair work, Water Quality Inquiry

Microbiological analysis for resamples and vicinities is conducted using the Membrane Filtration technique.

Chlorine residual and Turbidity 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

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

TCU - True Colour Unit

NTU - Nephelometric Turbidity Unit

CFU - Colony forming unit

µmhos/cm - Micromhos per centimeter

< - Less than

Radiation Monitoring results available from the Ministry of Labour.