

**Johannesburg Metro Water Quality Report - 12 Month**

23 January 2018 to 22 January 2019

Date generated: 11 February 2019

Determinand	Measurement units	Risk	Required compliance to SANS 241: 2015 standard (%)	SANS 241: 2015 standard limits (1)	No of results	Achieved Compliance to SANS 241: 2015 Spec(%)	Descriptive statistics		
							Mean	Standard Deviation	Mean + 3 standard deviations
<b>Microbiological determinands</b>									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	99.0%	0	3 499	99.9%	0	0.14	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	3 499	99.8%	0	4.97	15
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	3 499	99.8%	8	101.26	312
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	191	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	191	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	841	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	351	100.0%	5.31	0.72	7.46
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	2 479	100.0%	20.61	2.42	27.87
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	434	100.0%	143.89	9.74	173.11
Turbidity	(NTU)	Operational	95.0%	≤1	2 865	99.9%	0.32	0.11	0.64
Turbidity	(NTU)	Aesthetic	95.0%	≤5	2 865	100.0%	0.32	0.11	0.64
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	2 477	100.0%	7.98	0.14	8.39
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	2 430	100.0%	0.28	0.18	0.81
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	351	100.0%	11.00	1.01	14.03
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	3 499	100.0%	0.27	0.39	1.45
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	2 778	100.0%	1.55	0.45	2.89
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	351	100.0%	0.20	0.02	0.25
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	2 478	100.0%	0.47	0.05	0.61
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	2 479	100.0%	0.04	0.03	0.13
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	2 479	100.0%	0.08	0.04	0.20
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.2 Free Chlorine; ≥0.1 Sum of Free and Monochloramine	3 499	98.3%	1.50	0.52	3.06
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	351	100.0%	9.54	2.58	17.27
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	351	100.0%	14.75	1.19	18.33
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	351	100.0%	14.75	1.19	18.33
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	351	100.0%	0.07	0.22	0.74
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	351	100.0%	30.23	11.77	65.54
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	531	100.0%	0.56	0.32	1.52
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	346	100.0%	2.09	2.42	9.35
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	351	100.0%	42.26	5.95	60.12
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	351	100.0%	17.75	9.46	46.13
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	346	100.0%	1.98	0.67	4.00
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	351	100.0%	11.13	4.88	25.76
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	351	100.0%	12.48	6.50	31.98
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	341	100.0%	14.92	7.07	36.14
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	351	100.0%	17.11	19.23	74.79
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	351	100.0%	17.11	19.23	74.79
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	350	100.0%	1.75	2.42	9.01
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	351	100.0%	7.88	5.36	23.97
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	351	100.0%	7.88	5.36	23.97
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	531	100.0%	0.78	0.12	1.14
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	351	100.0%	8.06	2.44	15.38
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	346	100.0%	2.78	2.49	10.25
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	529	100.0%	0.37	0.31	1.31
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	340	100.0%	3.78	0.57	5.48
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	293	100.0%	4.22	0.98	7.15
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	341	100.0%	36.99	8.06	61.18
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	341	100.0%	4.18	4.63	18.08
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	341	100.0%	4.98	4.05	17.14
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	341	100.0%	13.34	2.29	20.21
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	341	100.0%	0.44	0.10	0.74
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	195	100.0%	0.31	0.00	0.31
<b>For monitoring/reporting purposes only (6)</b>									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	351	100.0%	17.51	1.78	22.85384106
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	351	100.0%	67.23	6.85	87.78
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	351	100.0%	6.77	0.87	9.38
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	351	100.0%	3.49	0.63	5.37
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	1 159	100.0%	1.00	0.00	1.00
Taste	FTN	RWRD	95.0%	≤2	1 159	100.0%	1.00	0.00	1.00

Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	99.92%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	100.00%
Operational	95.00%	99.54%

- Notes:**
- (1) Specification date of effect : 1 July 2016
  - (2) Free chlorine : Results from both the chlorinated and chloraminated systems
  - (3) Monochloramine : Results are from the choraminated systems
  - (4) Residual disinfectant : Results from both the chlorinated and chloraminated systems
  - (5) Measured at water treatment works exit points
  - (6) Customer request: Results not included in the risk indices compliance calculations
  - (7) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)
  - (8) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)