



RAND WATER

**Emfuleni Water Quality Report**  
12 Month

22 August 2019 to 21 August 2020

Date generated: 28 August 2020

							Descriptive Statistics		
Determinands	Measurement Units	Risks	SANS 241:2015 standard limits (1)	No of results	Required compliances to SANS 241:2015 spec(%)	Achieved compliances to SANS 241:2015 spec(%)	Mean	Standard Deviation	Mean + 3 Std deviations
<b>Microbiological determinands</b>									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	1,153	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	1,153	95.0%	99.91%	0	1.04	3
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	1,153	95.0%	100%	1	4.52	15
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	208	99.0%	99.04%	0	0.10	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	208	99.0%	98.56%	0	0.12	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	898	95.0%	99.89%	0	0.03	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	61	95.0%	100%	5.07	0.25	5.81
Conductivity	(mS / m)	Aesthetic	≤ 170	834	95.0%	100%	21.21	2.98	30.14
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	61	95.0%	100%	147.62	12.83	186.12
Turbidity	(NTU)	Operational	≤ 1	831	95.0%	100%	0.28	0.05	0.43
Turbidity	(NTU)	Aesthetic	≤ 5	831	95.0%	100%	0.28	0.05	0.43
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	833	95.0%	100%	7.97	0.16	8.44
<b>Chemical Properties: Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	832	95.0%	100%	0.03	0.07	0.25
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	26	95.0%	100%	11.48	2.83	19.97
Free chlorine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 5	1,153	97.0%	100%	1.33	0.40	2.54
Monochloramine	(mg / L as Cl <sub>2</sub> )	Chronic health	≤ 4.1	n/a	97.0%	n/a	n/a	n/a	n/a
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	26	97.0%	100%	0.29	0.07	0.50
Nitrate	(mg / L as N)	Acute health	≤ 11	838	99.0%	100%	0.51	0.04	0.63
Nitrite	(mg / L as N)	Acute health	≤ 0.9	837	99.0%	100%	0.01	0.01	0.04
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	837	99.0%	100%	0.12	0.19	0.68
Residual disinfectant (4)	(mg / L as Cl <sub>2</sub> )	Operational	≥ 0.2	1,153	95.0%	99.65%	1.33	0.40	2.54
Sodium	(mg / L as Na)	Aesthetic	≤ 200	66	95.0%	100%	10.15	1.78	15.50
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	≤ 250	65	95.0%	100%	17.83	4.57	31.54
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	≤ 500	65	99.0%	100%	17.83	4.57	31.54
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	66	95.0%	100%	0.02	0.02	0.07
<b>Chemical Properties: Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	≤ 300	66	95.0%	100%	30.35	11.83	65.83
Antimony	(µg / L as Sb)	Chronic health	≤ 20	24	97.0%	100%	0.63	0.12	0.99
Arsenic	(µg / L as As)	Chronic health	≤ 10	26	97.0%	100%	3.31	3.26	13.08
Barium	(µg / L as Ba)	Chronic health	≤ 700	66	97.0%	100%	41.89	6.91	62.63
Boron	(µg / L as B)	Chronic health	≤ 2400	66	97.0%	100%	8.79	3.07	18.00
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	26	97.0%	100%	1.15	0.24	1.86
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	66	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	66	97.0%	100%	8.17	0.81	10.61
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	61	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	66	97.0%	100%	22.53	15.45	68.88
Iron	(µg / L as Fe)	Aesthetic	≤ 300	66	95.0%	100%	22.53	15.45	68.88
Lead	(µg / L as Pb)	Chronic health	≤ 10	26	97.0%	100%	3.85	2.82	12.32
Manganese	(µg / L as Mn)	Chronic health	≤ 400	66	97.0%	100%	3.14	0.57	4.84
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	66	95.0%	100%	3.14	0.57	4.84
Mercury	(µg / L as Hg)	Chronic health	≤ 6	24	97.0%	100%	1.03	0.34	2.04
Nickel	(µg / L as Ni)	Chronic health	≤ 70	66	97.0%	100%	5.00	0.00	5.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	26	97.0%	100%	5.24	1.88	10.87
Uranium	(µg / L as U)	Chronic health	≤ 30	24	97.0%	100%	0.50	0.00	0.50
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	26	97.0%	100%	3.92	0.77	6.23
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	≤ 10	26	95.0%	100%	3.00	0.02	3.06
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	≤ 300	107	97.0%	100%	20.43	9.43	48.71
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	≤ 100	107	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	≤ 100	107	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	≤ 60	107	97.0%	100%	11.42	2.06	17.60
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	107	97.0%	100%	0.25	0.09	0.53
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	207	97.0%	100%	0.31	0.00	0.31
<b>For monitoring/reporting purposes only</b>									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	66	not applicable	100%	16.83	1.69	21.90
Hardness (7)	(mg / L as CaCO <sub>3</sub> )	Operational	≥ 20 to ≤ 200	66	not applicable	100%	66.82	6.95	87.67
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	66	not applicable	100%	7.13	0.94	9.94
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	66	not applicable	100%	3.24	0.50	4.75
<b>Rand Water Risk Determinands (RWRD) (6)</b>									
Odour	TON	RWRD	≤ 2	33	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	33	not applicable	100%	1.00	0.00	1.00

Water quality risk indices

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	99.68%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	99.90%

- Notes
- (1) Specification\_SANS 241 date of effect : 1 July 2016
  - (2) Measured at water treatment works exit points
  - (3) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)
  - (4) Residual disinfectant : Results from the chlorinated system = Free available chlorine
  - (5) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)
  - (6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006
  - (7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec