

**Emfuleni Municipality Water Quality Report - 12 Month**

23 October 2017 to 22 October 2018

Date generated: 05 November 2018

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	771	100.0%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	771	99.9%	0	1.26	4
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	771	100.0%	3	20.97	66
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	189	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	189	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	817	100.0%	0	0.00	0
<b>Physical and Aesthetic determinands</b>									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	16	100.0%	5.13	0.34	6.15
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	771	100.0%	19.79	1.81	25.23
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	16	100.0%	140.31	10.24	171.04
Turbidity	(NTU)	Operational	95.0%	≤1	762	99.7%	0.31	0.31	1.24
Turbidity	(NTU)	Aesthetic	95.0%	≤5	762	99.9%	0.31	0.31	1.24
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	771	100.0%	7.93	0.16	8.40
<b>Chemical Properties</b>									
<b>Macro determinands</b>									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	771	100.0%	0.05	0.03	0.13
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	16	100.0%	11.15	1.03	14.25
Free chlorine (2)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤5	771	100.0%	1.24	0.48	2.68
Monochloramine (3)	(mg / L as Cl <sub>2</sub> )	Chronic health	97.0%	≤4.1	not applicable	not applicable	not applicable	not applicable	not applicable
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	16	100.0%	0.19	0.00	0.21
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	771	100.0%	0.45	0.06	0.62
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	771	100.0%	0.03	0.01	0.05
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	771	100.0%	0.07	0.01	0.10
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.2 Free Chlorine	771	96.9%	1.24	0.48	2.68
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	16	100.0%	8.94	1.18	12.48
Sulphate	(mg / L as SO <sub>4</sub> )	Aesthetic	95.0%	≤250	16	100.0%	14.62	1.98	20.55
Sulphate	(mg / L as SO <sub>4</sub> )	Acute health	99.0%	≤500	16	100.0%	14.62	1.98	20.55
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	16	100.0%	0.08	0.25	0.82
<b>Micro determinands</b>									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	16	100.0%	28.31	7.08	49.55
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	15	100.0%	0.51	0.04	0.62
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	16	100.0%	1.84	2.52	9.40
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	16	100.0%	38.38	8.58	64.11
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	16	100.0%	21.38	7.97	45.30
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	16	100.0%	2.28	0.48	3.73
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	16	100.0%	13.13	4.03	25.22
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	16	100.0%	10.56	3.10	19.86
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	16	100.0%	11.62	7.64	34.53
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	16	100.0%	14.93	11.16	48.40
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	16	100.0%	14.93	11.16	48.40
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	16	100.0%	1.50	2.68	9.54
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	16	100.0%	9.26	2.67	17.28
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	16	100.0%	9.26	2.67	17.28
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	15	100.0%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	16	100.0%	9.06	2.02	15.11
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	16	100.0%	2.50	2.72	10.65
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	15	100.0%	0.30	0.14	0.71
<b>Organic determinands</b>									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	16	100.0%	3.74	0.50	5.24
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(µg / L)	Aesthetic	95.0%	≤10	16	100.0%	4.63	0.81	7.04
Chloroform - CHCl <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤300	93	100.0%	25.68	12.70	63.78
Bromoform - CHBr <sub>3</sub>	(µg / L)	Chronic health	97.0%	≤100	93	100.0%	2.24	3.69	13.31
Dibromochloromethane - CHBr <sub>2</sub> Cl	(µg / L)	Chronic health	97.0%	≤100	93	100.0%	2.82	3.47	13.24
Bromodichloromethane - CHBrCl <sub>2</sub>	(µg / L)	Chronic health	97.0%	≤60	93	100.0%	10.64	3.03	19.74
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	93	100.0%	0.31	0.12	0.66
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	193	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	16	100.0%	16.69	2.68	24.71635421
Hardness	(mg / L as CaCO <sub>3</sub> )	Operational	not applicable	≥ 20 to ≤ 200	16	100.0%	64.19	11.45	98.54
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	16	100.0%	6.51	1.45	10.85
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	16	100.0%	3.47	0.39	4.66
<b>Rand Water Risk Determinands (RWRD)</b>									
Odour	TON	RWRD	95.0%	≤2	no data	no data	no data	no data	no data
Taste	FTN	RWRD	95.0%	≤2	no data	no data	no data	no data	no data

Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	100.00%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	99.96%
Operational	95.00%	99.42%

- Notes:**
- (1) Specification date of effect : 1 July 2016
  - (2) Free chlorine : Results from chlorinated system
  - (3) Monochloramine : Chlorinated system has no monochloramine
  - (4) Residual disinfectant : Results from chlorinated system
  - (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)