

Table 3: CHEMICAL COMPOSITION OF WASTEWATERS IN ALEXANDRIA AND GIZA, EGYPT

Constituent	Alexandria		Giza	
	Unit	Concentration	Unit	Concentration
EC	dS/m	3.10	dS/m	1.7
pH		7.80		7.1
SAR		9.30		2.8
Na ⁺	me/l	24.60	mg/l	205
Ca ²⁺	me/l	1.50	mg/l	128
Mg	me/l	3.20	mg/l	96
K ⁺	me/l	1.80	mg/l	35
Cl ⁻	me/l	62.00	mg/l	320
SO ₄ ²⁻	me/l	35.00	mg/l	138
CO ₃	me/l	1.10		
HCO ₃ ⁻	me/l	6.60		
NH ₄ ⁺	mg/l	2.50		
NO ₃	mg/l	10.10		
P	mg/l	8.50		
Mn	mg/l	0.20	mg/l	0.7
Cu	mg/l	1.10	mg/l	0.4
Zn	mg/l	0.80	mg/l	1.4

Source: Abdel-Ghaffar *et al.* (1988)

Table 1. Limits for certain parameters in WWTP discharge standards in China.

Standards	Grade	BOD ₅ (mg·L ⁻¹)	COD _{Cr} (mg·L ⁻¹)	SS (mg·L ⁻¹)	NH ₃ -N (mg·L ⁻¹)	TN (mg·L ⁻¹)	TP (mg·L ⁻¹)
Integrated wastewater discharge standard (GB 8978-1988)	—	30	120	30	—	—	—
Integrated wastewater discharge standard (GB 8978-1996)	Grade 1 ¹	20	60	20	15	—	—
	Grade 2 ¹	30	120	30	25	—	—
Discharge standard of pollutants for municipal wastewater treatment plant (GB 18918-2002)	Grade 1-A ²	10	50	10	5(8) ³	15	0.5
	Grade 1-B ²	20	60	20	8(15) ³	20	1
	Grade 2 ²	30	100	30	25(30) ³	—	3

¹ According to GB 8978-1996, Grade 1 standards were for WWTPs discharging wastewater into surface water classified as Grade III according to “Environmental Quality Standards for Surface Water” (GB 3838-2002) [26]. Grade 2 standards were for WWTPs discharging wastewater into surface water classified as Grade IV-V according to GB 3838-2002; ² According to GB 18918-2002, Grade 1-A standards were for water discharged by WWTPs for reuse. Grade 1-B standards were for WWTPs discharging wastewater into surface water classified as Grade III according to GB 3838-2002. Grade 2 standards were for WWTPs discharging wastewater into surface water classified as Grade IV-V according to GB 3838-2002; ³ Limits in parentheses are for wastewater temperature ≤ 12 °C, and those outside parentheses are for >12 °C.

COD parameter was measured using COD Vials (COD 25–1500 mg/L, Merck, Germany).

Aluminum ions (Al^{+3}) were determined using Al Vials (Aluminum Test 0.020–1.20 mg/L, Merck, Germany).

Iron concentration (Fe^{+2}) was determined using Iron Vials (Iron Test 0.005–5.00 mg/L, Merck, Germany).

Cadmium ions (Cd^{+2}) were determined using Cadmium Vials (Cadmium Test 0.005–5.00 mg/L, Merck, Germany).

Nitrogen content was determined using Nitrate Vials (Nitrate Cell test in seawater 0.10–3.00 mg/L $\text{NO}_3\text{-N}$ or 0.4–13.3 mg/L N O_3^- , Merck, Germany).

Phosphorous content was determined using Phosphate Vials (Phosphate Cell Test 0.5–25.0 mg/L $\text{PO}_4\text{-P}$ or 1.5–76.7 mg/L $\text{P O}_4 - 3$, Merck, Germany).

Parameter	No of samples	Median value	Max value
Alkalinity - total g CaCO ₃ /m ³	13	50.00	62.000
Aluminium - total g/m ³	15	0.045	0.179
Arsenic - total g/m ³	2	<0.002	<0.002
Boron - total g/m ³	2	<0.05	<0.05
Cadmium - total g/m ³	2	<0.001	<0.001
Calcium Hardness g CaCO ₃ /m ³	2	15.850	16.500
Chloride g/m ³	2	<0.001	<0.001
Chromium - total g/m ³	2	18.750	20.300
Conductivity at 25°C mS/m	2	<0.013	<0.013
Copper - total g/m ³	13	<0.005	<0.005