

Evaluation of Drinking Water Quality in Group of Schools at Mosul City

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ABSTRACT

The monitoring of water quality produced for drinking is one of the most important study in order to evaluate the suitability of water for human consumption also to evaluate efficiencies of treatment water plants and water distribution system especially in the present situation of the country. This study focusing on the quality of drinking water used by student in some schools at Mosul city. Where 17 schools had been selected through the city. main chemical and physical analysis had been done on these samples in addition to the total bacteria count, the study revealed that the water quality of the studied schools was within the standards of drinking water. A negative result were appeared for total bacteria count in one sample, only seem to be an indication of a new case of pollution with bacteria, this might be due to the water supply network, fortunately the result were within the Iraqi standards for drinking water.

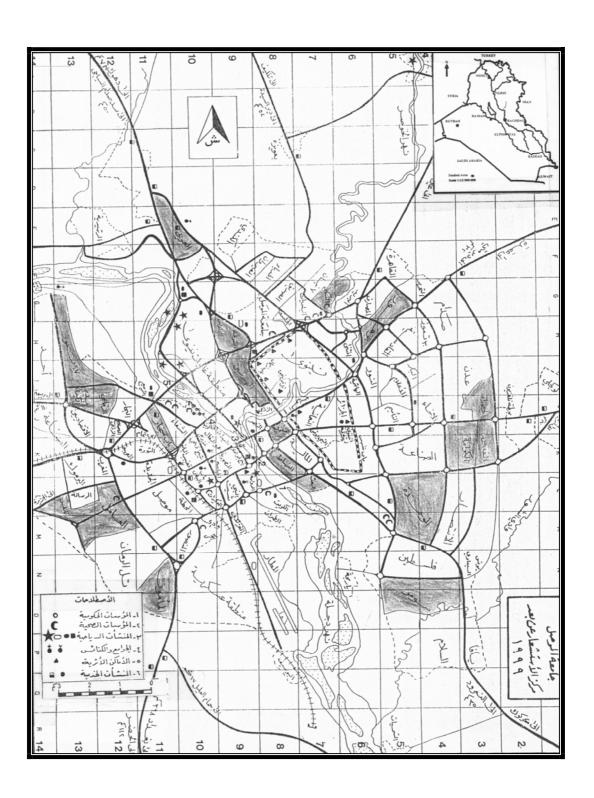
Key words: Water quality, Drinking water, Schools, Iraq, Mosul, Blockade, Water Supply.

قبل في 2005/11/17

أستلم في 2004/12/4

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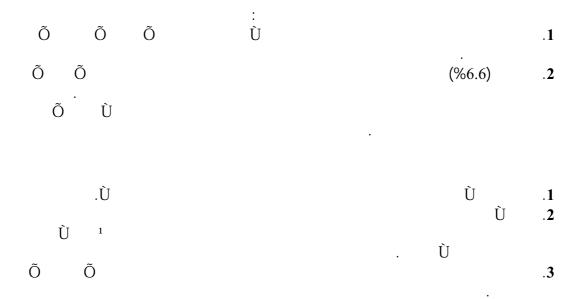
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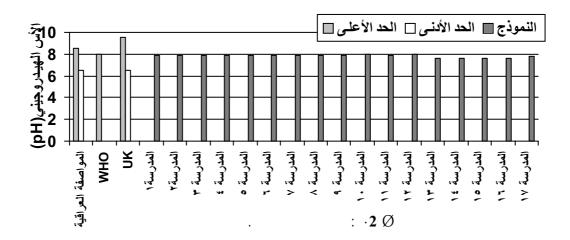
Ù\	PO ₄ -3 mg/l	SO ₄ -2 mg/l	NO ₃ -1 mg/l	Cl ⁻¹ mg/l	mg/l as CaCO ₃	mg/l as CaCO ₃	ntu	EC. μS/cm @ 25°C	рН	_
0	0.027	56	0.35	11	120	225	1.4	421	7.93	1
0	0.03	56	0.31	10	140	230	2.2	394	7.9	2
0	0.04	61	0.3	11	150	235	2.5	422	7.87	3
36	0.012	55	0.33	10	150	230	1.9	423	7.93	4
0	0.017	58	0.36	12	120	220	0.6	418	7.89	5
0	0.06	56	0.33	11	120	220	0.8	416	7.91	6
0	0.03	58	0.33	10	125	220	1.2	390	7.92	7
0	0.07	56	0.4	11	120	235	0.6	419	7.89	8
0	0.007	56	0.36	9	110	225	0.7	410	7.91	9
0	0.012	65	0.3	10	125	235	1	419	7.65	10
0	0.008	57	0.38	11	115	230	1.2	418	7.93	11
0	0.042	63	0.34	12	115	230	1.4	441	7.94	12
0	0.025	72	0.29	11	115	235	5	349	7.66	13
0	0.01	71	0.33	10	115	270	3.8	438	7.65	14
0	0.012	72	0.33	11	130	265	2.1	433	7.65	15
0	0.01	56	0.29	11	110	215	0.6	407	7.95	16
0	0.006	63	0.32	10	115	225	2	416	7.84	17

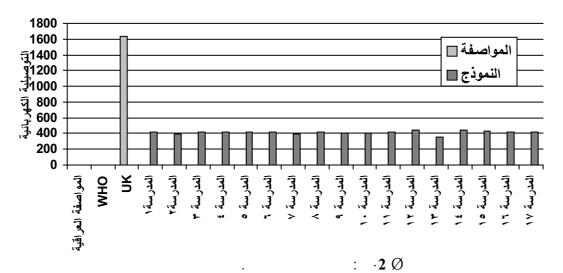
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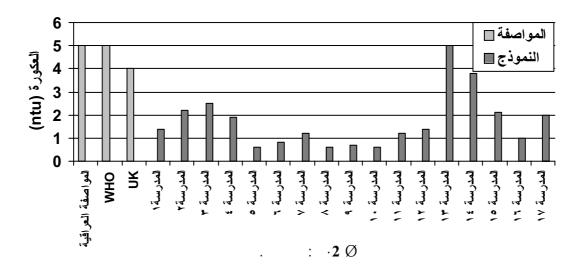
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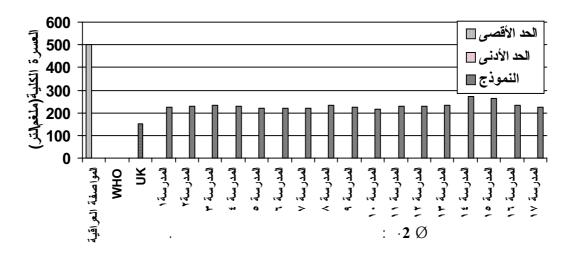
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1635	-	-	(μ S/cm)@25°C
4	5	5	(ntu)
400	250	200	(mg/l) (Cl ⁻¹)
50	50	20	(mg/l) (NO ₃ ⁻¹)
250	250	200	(mg/l) (SO ₄ -2)
2.2	-	-	$(mg/l) (PO_4^{-3}-p)$
150 Ù	-	500	(mg/l as CaCO ₃)
30 Ù	-	170	(mg/l as CaCO ₃)
-	-	50	(\)

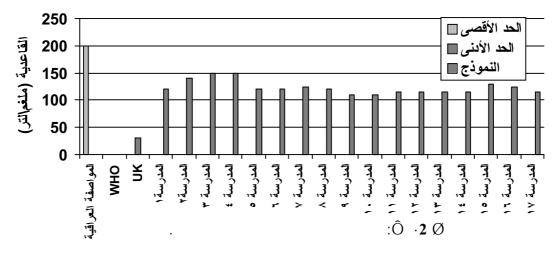


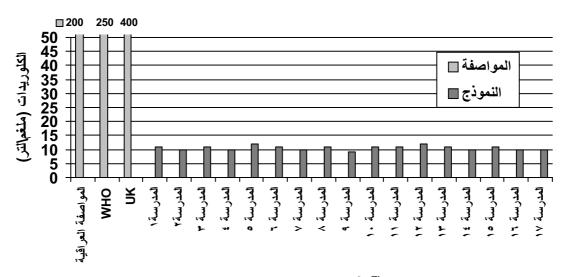




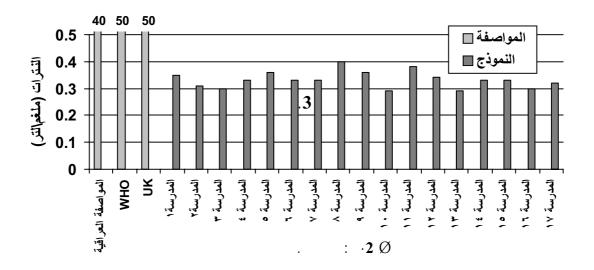


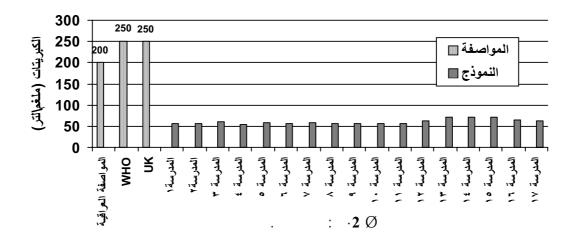


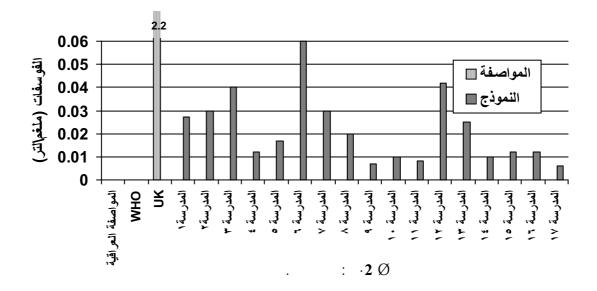




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	. 163 ¸ ¸Ù	
2.	Tebbutt, T. H. Y., 1998. Principles of Water Quality Control, 5 th ed.,	
	Butter worth- heinemann, Oxford, USA, 280p.	
3.	McGhee, T. J., 1991. Water Supply and Sewerage, 6 th ed., McGraw-Hill,	
	Inc., New york, USA, 602p.	
4.	Twort, A. C., Ratnayaka, S. D. and Brandt, M. J., 2001. Water Supply,	
	5 th ed., Butter worth- heinemann, Oxford, USA, 676p.	
	Õ ¸Õ - Õ .1990 ¸	.5
	. 194 ,	
6.	htt//www.aljazeera.net/in-depth/iraq blockade/2003/3/3-18-1.htm	
7.	http://www.albaycen.coae/albayan/alarabea/2003/isswe/orbit/1.htm	
8.	APHA, AWWA, WPCF, 1985. Standard Method for the Examination of	
	Water and Wastewater, 16 th ed., NewYork, 1268p.	
	.1991 ,	.9
	. 296 ¸ ¸Ù ¸	
10.	WHO, 1997. Giudlines for drinking water quality Health Criteria and	
	Other Supporting Information, Vol.2, 2 nd ed. Geneva, (CEHA),	
	Amman, Jordan, 973p.	
	295 , Õ , Õ ÙÕ , .2000 , .	.11