SOCIALIST REPUBLIC OF VIETNAM

QCVN 01 : 2009/BYT

NATIONAL TECHNICAL REGULATION ON DRINKING WATER QUALITY

HANOI – 2009

Preface:

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NATIONAL TECHNICAL REGULATION ON THE DRINKING WATER QUALITY

PART I. GENERAL RULES

I. Applicable scope

This Technical Regulation stipulates limits of quality criteria for water used for drinking and processing food (hereinafter called drinking water).

II. Applicable subject

This Technical Regulation applies to institutions, organizations, individuals and households who exploit, trade drinking water, including piped water providers for domestic purposes with capacity of 1,000 m^3/day or above (hereafter called water providers).

III. Explanation of words/phrases

In this Regulation, following words/phrases will be thoroughly understood as:

1. Perceptible criteria are elements on color and taste which are felt by human senses.

2. AOAC stands for *Association of Official Analytical Chemists*.

3. SMEWW stands for *Standard Methods for the Examination of Water and Waste Water*.

4. US EPA stands for *United States Environmental Protection Agency*.

5. TCU stands for *True Color Unit*.

6. NTU stands for *Nephelometric Turbidity Unit*.

7. pCi/l stands for *Picocuri per litre*.

PART II. STIPULATIONS ON TECHNICAL AREAS

Table on the limits of quality parameters:

Or.	Parameter	Unit	Maximum limit	Testing method	Examination Level
I. Perceptible parameters and inorganic constituents					
1.	Color (*)	TCU	15	TCVN 6185 - 1996 (ISO 7887 - 1985) or	A

				SMEWW 2120	
2.	Taste and odour (*)	-	No strange taste & odour	Perceptible, or SMEWW 2150 B and 2160 B	A
3.	Turbidity (*)	NTU	2	TCVN 6184 - 1996 (ISO 7027 - 1990) or SMEWW 2130 B	A
4.	pH(*)	-	Within 6,5-8,5	TCVN 6492:1999 or SMEWW 4500 - H^+	A
5.	Hardness, calculated by $CaCO_3$ (*)	mg/l	300	TCVN 6224 - 1996 or SMEWW 2340 C	A
6.	Total Dissolved Solid (TDS) (*)	mg/l	1000	SMEWW 2540 C	B
7.	Aluminum(*)	mg/l	0,2	TCVN 6657 : 2000 (ISO 12020 :1997)	B
8.	Ammoniac(*)	mg/l	3	SMEWW 4500 - NH_3 C or SMEWW 4500 - NH_3 D	B
9.	Antimony	mg/l	0,005	US EPA 200.7	C
10.	Total Arsenic	mg/l	0,01	TCVN 6626:2000 or SMEWW 3500 - As B	B
11.	Barium	mg/l	0,7	US EPA 200.7	C
12.	Boron and boric acid	mg/l	0,3	TCVN 6635: 2000 (ISO 9390: 1990) or SMEWW 3500 B	C
13.	Cadmium	mg/l	0,003	TCVN6197 - 1996 (ISO 5961 - 1994) or SMEWW 3500 Cd	C
14.	Chloride (*)	mg/l	250 300(**)	TCVN6194 - 1996 (ISO 9297 - 1989) or SMEWW 4500 - Cl^- D	A
15.	Total Chromium	mg/l	0,05	TCVN 6222 - 1996 (ISO 9174 - 1990) or SMEWW 3500 - Cr^-	C
16.	Total Copper (*)	mg/l	1	TCVN 6193 - 1996 (ISO 8288 - 1986) or SMEWW 3500 - Cu	C
17.	Cyanide	mg/l	0,07	TCVN 6181 - 1996 (ISO 6703/1 - 1984) or SMEWW 4500 - CN^-	C
18.	Flouride	mg/l	1,5	TCVN 6195 - 1996 (ISO10359 - 1 - 1992) or SMEWW 4500 - F^-	B
19.	Hydrogen sulfide(*)	mg/l	0,05	SMEWW 4500 - S^{2-}	B

20.	Total Iron (Fe^{2+} + Fe^{3+})(*)	mg/l	0,3	TCVN 6177 - 1996 (ISO 6332 - 1988) or SMEWW 3500 - Fe	A
21.	Lead	mg/l	0,01	TCVN 6193 - 1996 (ISO 8286 - 1986) SMEWW 3500 - Pb A	B
22.	Total Manganese	mg/l	0,3	TCVN 6002 - 1995 (ISO 6333 - 1986)	A
23.	Total Mercury	mg/l	0,001	TCVN 5991 - 1995 (ISO 5666/1-1983 - ISO 5666/3 -1983)	B
24.	Molybdenum	mg/l	0,07	US EPA 200.7	C
25.	Nickel	mg/l	0,02	TCVN 6180 -1996 (ISO8288 -1986) SMEWW 3500 - Ni	C
26.	Nitrate	mg/l	50	TCVN 6180 - 1996 (ISO 7890 -1988)	A
27.	Nitrite	mg/l	3	TCVN 6178 - 1996 (ISO 6777-1984)	A
28.	Selenium	mg/l	0,01	TCVN 6183-1996 (ISO 9964-1-1993)	C
29.	Sodium	mg/l	200	TCVN 6196 - 1996 (ISO 9964/1 - 1993)	B
30.	Sulfate (*)	mg/l	250	TCVN 6200 - 1996 (ISO9280 - 1990)	A
31.	Zinc (*)	mg/l	3	TCVN 6193 - 1996 (ISO8288 - 1989)	C
32.	Permanganate	mg/l	2	TCVN 6186:1996 or ISO 8467:1993 (E)	A
II. Content of organic substances					
a. **Chlorinated alkenes**					
33.	Carbon tetrachloride	µg/l	2	US EPA 524.2	C
34.	Dichloromethane	µg/l	20	US EPA 524.2	C
35.	1,2 Dichloroethane	µg/l	30	US EPA 524.2	C
36.	1,1,1 - Trichloroethane	µg/l	2000	US EPA 524.2	C
37.	Vinyl chloride	µg/l	5	US EPA 524.2	C
38.	1,2 Dichloroethene	µg/l	50	US EPA 524.2	C
39.	Trichloroethene	µg/l	70	US EPA 524.2	C
40.	Tetrachloroethene	µg/l	40	US EPA 524.2	C
b. **Aromatic hydrocarbons**					
41.	Phenol and derivatives of Phenol	µg/l	1	SMEWW 6420 B	B
42.	Benzene	µg/l	10	US EPA 524.2	B

43.	Toluene	µg/l	700	US EPA 524.2	C
44.	Xylenes	µg/l	500	US EPA 524.2	C
45.	Ethyl benzene	µg/l	300	US EPA 524.2	C
46.	Styrene	µg/l	20	US EPA 524.2	C
47.	Benzo(a)pyrene	µg/l	0,7	US EPA 524.2	B
c. **Chlorinated benzenes**					
48.	Monochlorobenzens	µg/l	300	US EPA 524.2	B
49.	1,2- Dichlorobenzene	µg/l	1000	US EPA 524.2	C
50.	1,4- Dichlorobenzene	µg/l	300	US EPA 524.2	C
51.	Trichlorobenzene	µg/l	20	US EPA 524.2	C
d. Groups of complex organic substances					
52.	Di(2-etylhexyl) adipate	µg/l	80	US EPA 525.2	C
53.	Di(2-etyhlexyl) phtalat	µg/l	8	US EPA 525.2	C
54.	Acrylamide	µg/l	0,5	US EPA 8032A	C
55.	Epiclohydrin	µg/l	0,4	US EPA 8260A	C
56.	Hexacloro butadiene	µg/l	0,6	US EPA 524.2	C
III. Pesticides					
57.	Alachlor	µg/l	20	US EPA 525.2	C
58.	Aldicarb	µg/l	10	US EPA 531.2	C
59.	Aldrin/Dieldrin	µg/l	0,03	US EPA 525.2	C
60.	Atrazine	µg/l	2	US EPA 525.2	C
61.	Bentazone	µg/l	30	US EPA 515.4	C
62.	Carbofuran	µg/l	5	US EPA 531.2	C
63.	Chlordane	µg/l	0,2	US EPA 525.2	C
64.	Chlorotoluron	µg/l	30	US EPA 525.2	C
65.	DDT	µg/l	2	SMEWW 6410B, or SMEWW 6630 C	C
66.	1,2 - Dibromo - 3 Chloropropane	µg/l	1	US EPA 524.2	C
67.	2,4 - D	µg/l	30	US EPA 515.4	C
68.	1,2 - Dichloropropane	µg/l	20	US EPA 524.2	C
69.	1,3 - Dichloropropene	µg/l	20	US EPA 524.2	C
70.	Heptachlor & heptachlor epoxide	µg/l	0,03	SMEWW 6440C	C
71.	Hexachlorobenzene	µg/l	1	US EPA 8270 - D	C
72.	Isoproturon	µg/l	9	US EPA 525.2	C
73.	Lindane	µg/l	2	US EPA 8270 - D	C

74.	MCPA	µg/l	2	US EPA 555	C
75.	Methoxychlor	µg/l	20	US EPA 525.2	C
76.	Methachlor	µg/l	10	US EPA 524.2	C
77.	Molinate	µg/l	6	US EPA 525.2	C
78.	Pendimetalin	µg/l	20	US EPA 507, US EPA 8091	C
79.	Pentaclorophenol	µg/l	9	US EPA 525.2	C
80.	Permethrin	µg/l	20	US EPA 1699	C
81.	Propanil	µg/l	20	US EPA 532	C
82.	Simazine	µg/l	20	US EPA 525.2	C
83.	Trifuralin	µg/l	20	US EPA 525.2	C
84.	2,4 DB	µg/l	90	US EPA 515.4	C
85.	Dichloprop	µg/l	100	US EPA 515.4	C
86.	Fenoprop	µg/l	9	US EPA 515.4	C
87.	Mecoprop	µg/l	10	US EPA 555	C
88.	2,4,5 - T	µg/l	9	US EPA 555	C
IV. Disinfectants and disinfectant by-products					
89.	Monochloramine	µg/l	3	SMEWW 4500 - Cl G	B
90.	Chlorine residue	mg/l	Within 0,3 - 0,5	SMEWW 4500Cl or US EPA 300.1	A
91.	Bromate	µg/l	25	US EPA 300.1	C
92.	Chlorite	µg/l	200	SMEWW 4500 Cl or US EPA 300.1	C
93.	2,4,6 Trichlorophenol	µg/l	200	SMEWW 6200 or US EPA 8270 - D	C
94.	Formaldehyde	µg/l	900	SMEWW 6252 or US EPA 556	C
95.	Bromoform	µg/l	100	SMEWW 6200 or US EPA 524.2	C
96.	Dibromchlorometane	µg/l	100	SMEWW 6200 or US EPA 524.2	C
97.	Bromodichlorometane	µg/l	60	SMEWW 6200 or US EPA 524.2	C
98.	Chloroform	µg/l	200	SMEWW 6200	C
99.	Dichloroacetic acid	µg/l	50	SMEWW 6251 or US EPA 552.2	C
100.	Tricloroacetic acid	µg/l	100	SMEWW 6251 or US EPA 552.2	C
101.	Chloral hydrate (trichloroacetaldehyde)	µg/l	10	SMEWW 6252 or US EPA 8260 - B	C
102.	Dichloroacetonitrile	µg/l	90	SMEWW 6251 or US EPA 551.1	C

103.	Dibromoacetonitrile	µg/l	100	SMEWW 6251 or US EPA 551.1	C
104.	Trichloroacetonitrile	µg/l	1	SMEWW 6251 or US EPA 551.1	C
105.	Cyano chlorite (as CN^-)	µg/l	70	SMEWW 4500J	C
V. Radioactive constituents					
106.	Gross α activity	pCi/l	3	SMEWW 7110 B	B
107.	Gross β activity	pCi/l	30	SMEWW 7110 B	B
VI. Micro-organism					
108.	Total Coliform	Bacterial/100 ml	0	TCVN 6187 - 1,2 :1996 (ISO 9308 - 1,2 - 1990) or SMEWW 9222	A
109.	E.coli or thermo-tolerant coliform	Bacterial/100 ml	0	TCVN6187 - 1,2 : 1996 (ISO 9308 - 1,2 - 1990) or SMEWW 9222	A

Note:

- (*) perceptible parameters.

- (**) Applicable to maritime areas and islands.

- Both Nitrate and Nitrite might possibly create Methaemoglobin. Thus, in case both substances exist in drinking water, then the concentration (C) of each substance in compared with maximum limit is not allowed to exceed 1 and is calculated by following formula :

Cnitrate/max limit of Nitrate + **C**nitrite/max limit of Nitrite $\leq$ 1

PART III.
FREQUENCY OF WATER QUALITY MONITORING/INSPECTION

I. Monitoring/inspection prior to the use of water sources

- Testing of all parameters under A, B, C levels to be carried out by water providers.

II. Regular monitoring

1. For parameters under A level:

a) Test at least 01 time per week, to be done by water providers ;

b) Test, monitor and experiment at least 01 time per month by functional agencies.

2. For parameters under B level:

a) Test at least 01 time per 6 months, to be done by water providers;

b) Test, monitor and experiment at least 01 time per 6 months by functional agencies.

3. For parameters under C level:

a) Test at least 01 time per 2 years, to be done by water providers;

b) Test, monitor and experiment at least 01 time per 2 years by functional agencies

III. Unscheduled monitoring/inspection

1. Following circustances are required to have urgent monitoring/inspection:

a) The results of testing of water sources' hygiene or epicdemic investigations reveal that water sources have potentially risks to contamination.

b) Environmental incidents appeared, which might negatively impact to the hygienic quality of water sources;

c) Other specific requirements.

PART IV.
IMPLEMENTATION ARRANGEMENTS

I. Responsibilities of water providers:

1. Ensure water quality and carry out the testing/monitoring as per stipulations in this Technical Regulation.

2. Subject to the testing, monitoring/inspection of functional agencies.

II. Responsibilities of provincial Department of Health

Provincial DOHs will be responsible to provide guidance, inspection/monitoring on the compliance of this Technical Regulation of relevant organizations, institutions, individuals who involve in the process of exploitation, production and trading water for drinking purposes within the provincity/city.

III. Responsibilities of Ministry of Health

MOH will lead relevant agencies/institutions to provide guidance, inspection/monitoring on the compliance of this Technical Regulation.

IV. In case of possible changes/supplementation or adjustment of stipulations in this Technical Regulation, the new/revised regulatory document issued by MOH's Minister will be followed.