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Report Highlights:

On March 15, 2022, the People's Republic of China (PRC) State Administration for Market Regulation and National Standardization Committee released National Food Safety Standard for Drinking Water Quality (GB5749-2022), which entered into force on April 1, 2023. This report contains an unofficial translation of the standard. This report is being published and shared by FAS China now owing to its relevance for several commodity sectors attempting to register as part of the PRC's Decree 248 facility registration requirements.

THIS REPORT CONTAINS ASSESSMENTS OF COMMODITY AND TRADE ISSUES MADE BY USDA STAFF AND NOT NECESSARILY STATEMENTS OF OFFICIAL U.S. GOVERNMENT POLICY

BEGIN TRANSLATION

Foreword

This document is drafted in accordance with the provisions of GB/T 1.1-2020 Directives for Standardization Part 1: Rules for Structure and Drafting of Standardization Documents.
This document replaces GB 5749-2006 Standards for Drinking Water Quality. Compared to GB 5749-2006, except for structural adjustments and editorial changes, the main technical changes are as follows:

a) The water quality indicators were adjusted from 106 items in GB 5749-2006 to 97 items in the revised standard, including 43 conventional indicators and 54 expanded indicators (see Chapter 4). Among them:

- Four indicators were added, including perchlorate, acetochlor, 2-methylisoborneol, and geosmin,
- Thirteen indicators were deleted, including thermotolerant coliforms, trichloroacetaldehyde, sulfides, cyanogen chloride (calculated as CN^-), hexachlorocyclohexane (total), parathion, methyl parathion, lindane, DDT, formaldehyde trichloroethane, 1,1,1-trichloroethane, 1,2-chlorobenzene, and ethylbenzene,
- The names of three indicators were changed, including changing the name of oxygen consumption (COD_{Mn} method, calculated as O_2) to permanganate index (calculated as O_2), ammonia nitrogen (calculated as N) to ammonia (calculated as N), and 1,2-dichloroethylene to 1,2-dichloroethylene (total),
- The limit values of 8 indicators were changed, including nitrate (calculated as N), turbidity, permanganate index (calculated as O_2), free chlorine, boron, vinyl chloride, trichloroethylene, and dimethoate,
- Specific requirements for nuclide analysis and evaluation of total β radioactive indicators and application of microcystin-LR indicators were added,
- Temporary regulations on water quality indicators and limits for small-scale centralized and decentralized water supply were removed (see Chapter 4 of the 2006 edition).

b) The reference indicators for water quality were adjusted from 28 items in GB 5749-2006 to 55 items (see Appendix A). Among them:

- Twenty nine indicators were added, including vanadium, BHC (total), parathion, methyl parathion, lindane, DDT, trichlorfon, methyl thiophanate, isoprothiolane, trifluralin, metalaxyl, simetryne, acephate, formaldehyde, trichloroacetaldehyde, cyanogen chloride (calculated by CN^-), nitrosodimethylamine, iodoacetic acid, 1,1,1-trichloroethane, ethylbenzene, 1,2-dichlorobenzene, perfluorooctanoic acid, perfluorooctane sulfonate, dimethyl disulfide, dimethyl trisulfide, iodide, sulfide, uranium, radium-226,
- Two indicators were deleted, including 2-methylisoborneol and geosmin,

- The names of three indicators have been changed, including changing the name of dibromoethylene to 1,2-dibromoethane and changing the name of asbestos (>10 μm) to asbestos (fiber>10 μm),
- Limit value of an indicator was changed, that is petroleum (total).

Please note that certain contents of this document may involve patents. The issuing agency of this document does not bear any responsibility for identifying patents.

This document is proposed and under the jurisdiction of the National Health Commission of the People's Republic of China.

The previous versions of this document were released as follows:

– First version was published in 1985 as GB 5749-1985, revised in 2006,
– This is the second revision.

Standard for Drinking Water Quality

1. Scope

This document specifies the requirements for drinking water quality, drinking water source quality, hygiene requirements of centralized water supply unit, secondary water supply hygiene requirements, product hygiene requirements related to drinking water safety, and water quality test methods.

This document is applicable to various types of drinking water.

2. Normative References

The content in the following documents constitutes an essential clause of this document through normative references in the text. Among them, for dated references, only the version corresponding to that date is applicable to this document, for undated references, the latest version (including all modifications) applies to this document.

GB 3838 Environmental Quality Standard for Surface Water
GB/T 5750.1-GB/T 5750.13 Standard Test Methods for Drinking Water
GB/T 14848-2017 Standard for Groundwater Quality
GB 17051 Hygienic Specification for Secondary Water Supply Facilities
GB/T 17218-1998 Hygienic Safety Evaluation for Chemicals Used in Drinking Water Treatment
GB/T 17219-1998 Standard for Safety Evaluation of Equipment and Protective Materials in Drinking Water System

3. Terms and Definitions

The following terms and definitions apply to this document.

3.1 Drinking water
Drinking water and water supply for humans.

3.2 Centralized water supply
The water supply method that collects water from water sources and deliver to users or public water intake points through transmission and distribution pipeline network.

3.3 Small centralized water supply
Centralized water supply with a designed daily water supply capacity of less than 1,000 m^3 or a water supply population of less than 10,000 people.

3.4 Decentralized water supply
The water supply method that users obtain water from source directly without any treatment or with only simple treatment facilities.

3.5 Finished water
Water that will soon enter transmission and distribution pipeline network after completing treatment processes in the centralized water supply unit.

3.6 Tap water
Water that is transmitted to user's faucet through the distribution pipeline network.

3.7 Regular indices
Indicators that reflect the basic condition of drinking water quality.

3.8 Expanded indices
Indicators that reflect characteristics of drinking water quality in a region and water quality status within a certain period or under special circumstances.

4. Requirements for Drinking Water Quality

4.1 Quality of drinking water should meet the following basic requirements to ensure safe drinking for users:

a) Drinking water should not contain pathogenic microorganisms,
b) Chemicals in drinking water should not be harmful to human health,
c) Radioactive substances in drinking water should not be harmful to human health,
d) The sensory properties of drinking water are good,
e) Drinking water should be disinfected.

4.2 The quality of drinking water should meet the requirements of Table 1 and Table 3. The limit values and disinfectants residuals in the finished water should meet the requirements of Table 2.

Note: When drinking water contains indicators listed in Appendix A, the limit values evaluation of the indicators in Table A.1 can be referred to.

Table 1: Regular Indices and Limit Values of Drinking Water Quality

Serial	Indices	Limit Values
I. Microbial indicators		
1	Total coliforms/ (MPN/100 mL or CFU/100 mL) [a]	Should not be detected

2	Escherichia coli/ (MPN/100 mL or CFU/100 mL) [a]	Should not be detected
3	Total bacteria count/ (MPN/mL or CFU/100 mL) [b]	100
II. Toxicological indicators		
4	Arsenic/(mg/L)	0.01
5	Cadmium/(mg/L)	0.005
6	Chromium/ (hexavalent)/(mg/L)	0.05
7	Lead/(mg/L)	0.01
8	Mercury/(mg/L)	0.001
9	Cyanide/(mg/L)	0.05
10	Fluoride/(mg/L) [b]	1.0
11	Nitrate (as N)/(mg/L) [b]	10
12	Trichloromethane/(mg/L) [c]	0.06
13	Chlorodibromomethane/(mg/L) [c]	0.1
14	Bromodichloromethane/(mg/L) [c]	0.06
15	Tribromomethane/(mg/L) [c]	0.1
16	Trihalomethane (the totality of trichloromethane, chlorodibromomethane, bromodichloromethane, and tribromomethane) [c]	The sum of ratio of measured concentration of various compounds to their respective limit values shall not exceed 1
17	Dichloroacetic acid/(mg/L) [c]	0.05
18	Trichloroacetic acid/(mg/L) [c]	0.1
19	Bromate/(mg/L) [c]	0.01
20	Chlorous acid/(mg/L) [c]	0.7
21	Chlorate/(mg/L) [c]	0.7
III. Sensory and chemical indicators [d]		
22	Chroma (Pt-Co Chroma unit)/degree	15
23	Turbidity (unit of scattered turbidity)/NTU[b]	1
24	Odor and smell	No abnormal smell or odor
25	Visible objects	None
26	pH	Not less than 6.5 and not more than 8.5
27	Aluminum/(mg/L)	0.2
28	Iron/(mg/L)	0.3

29	Manganese/(mg/L)	0.1
30	Copper/(mg/L)	1.0
31	Zinc/(mg/L)	1.0
32	Chloride/(mg/L)	250
33	Sulfate/(mg/L)	250
34	Total dissolved solids/(mg/L)	1,000
35	Total hardness (calculated as $CaCO_3$)/(mg/L)	450
36	Permanganate index (calculated as O_2)/(mg/L)	3
37	Ammonia (calculated as N)/(mg/L)	0.5
IV. Radioactivity indicators *		
38	Total α radioactivity/(Bq/L)	0.5 (guide value)
39	Total β radioactivity/(Bq/L)	1 (guide value)

MPN represents the most possible number and CFU stands for colony forming unit. When the total coliform is detected in the water sample, further testing for Escherichia Coli should be conducted, and when the total coliform is not detected in the water sample, it is not necessary to test for Escherichia Coli.

[b] When water source and purification technology are limited for small-scaled centralized and decentralized water supply, the limit value for total bacteria count index is 500 MPN/mL or 500 CFU/mL, the limit value for fluoride index is 1.2 mg/L, the limit value for nitrate (calculated as N) index is 20 mg/L, and the limit value for turbidity index is 3 NTU.

[c] Pre-oxidation or disinfection methods in water treatment process:

-When using liquid chlorine, calcium hypochlorite, and chloramine, should test trichloromethane, chlorodibromomethane, bromodichloromethane, tribromomethane, trihalomethane, dichloroacetic acid, and trichloroacetic acid.

-When using sodium hypochlorite, should test trichloromethane, chlorodibromomethane, bromodichloromethane, tribromomethane, trihalomethane, dichloroacetic acid, trichloroacetic acid, and chlorate.

-When using ozone, should test bromate.

-When chlorine dioxide is used, should test chlorite.

-When chlorine dioxide and chlorine mixed disinfectant generator is used, should test chlorite, chlorate, chloroform, bromodichloromethane, dichlorobromomethane, tribromomethane, trihalomethane, dichloroacetic acid and trichloroacetic acid.

-When source water contains the above-mentioned pollutants, it can lead to risk of exceeding limit values for the finished water and tap water, regardless of pre-oxidation or disinfection method is used, it should be tested.

[d] When an emergency public event occurs that affects water quality, after risk assessment, the sensory properties and general chemical indicators can be temporarily loosened appropriately.

[e] When radioactivity index exceeds the guidance value (if the total β radioactivity is still greater than 1 Bq/L after deducting ^{40}K), nuclide analysis and evaluation should be conducted to determine whether the water can be consumed.

Table 2: General Indices and Requirements for Disinfectants for Drinking Water

Serial No.	Index	Contact time with water/ min	Limit value for finished water and tap water /(mg/L)	Finished water surplus/(mg/L)	Tap water surplus/(mg/L)
40	Free chlorine [a, d]	≥30	≤2	≥0.3	≥0.05
41	Total chlorine [b]	≥120	≤3	≥0.5	≥0.05
42	Ozone [c]	≥12	≤0.3	-	≥0.02 If other collaborative disinfection methods are used, the disinfectant limit value and surplus should meet the corresponding requirements
43	Chlorine dioxide [d]	≥30	≤0.8	≥0.1	≥0.02

a. When using disinfection methods of liquid chlorine, sodium hypochlorite, and calcium hypochlorite, free chlorine should be determined.
b. When using chloramine disinfection method, total chlorine should be determined.
c. When using ozone disinfection method, ozone should be determined.
d. When using chlorine dioxide disinfection method, chlorine dioxide should be determined; When using a chlorine dioxide and chlorine mixed disinfectant generator for disinfection, chlorine dioxide and free chlorine should be determined. Both indicators should meet the limit requirements, and at least one indicator should meet the surplus requirements.

Table 3: Extended Indices and Limits of Drinking Water Quality

Serial	Index	Limit value
I. Microbial indicators		
44	Giardia / (number/10 L)	<1
45	Cryptosporidium parvum/ (number/10 L)	<1
II. Toxicological indicators		
46	Stibium/(mg/L)	0.005
47	Barium/(mg/L)	0.7
48	Beryllium/(mg/L)	0.002
49	Boron/(mg/L)	1.0
50	Mo/(mg/L)	0.07
51	Nickel/(mg/L)	0.02

52	Argentum/(mg/L)	0.05
53	Thallium/(mg/L)	0.0001
54	Selenium/(mg/L)	0.01
55	Perchlorate/(mg/L)	0.07
56	Dichloromethane/(mg/L)	0.02
57	1,2-Dichloroethane/(mg/L)	0.03
58	Carbon tetrachloride/(mg/L)	0.002
59	Vinyl chloride/(mg/L)	0.001
60	1,1-Dichloroethylene/(mg/L)	0.03
61	1,2-Dichloroethylene (total)/(mg/L)	0.05
62	Trichloroethylene/(mg/L)	0.02
63	Tetrachloroethylene/(mg/L)	0.04
64	Hexachlorobutadiene/(mg/L)	0.0006
65	Benzene/(mg/L)	0.01
66	Toluene/(mg/L)	0.7
67	Xylene (total)/(mg/L)	0.5
68	Styrene/(mg/L)	0.02
69	Chlorobenzene/(mg/L)	0.3
70	1,4-dichlorobenzene/(mg/L)	0.3
71	Trichlorobenzene (total)/(mg/L)	0.02
72	HCB/(mg/L)	0.001
73	Heptachlor/(mg/L)	0.0004
74	Malathion/(mg/L)	0.25
75	Dimethoate/(mg/L)	0.006
76	Bentazone/(mg/L)	0.3
77	Chlorothalonil/(mg/L)	0.01
78	Furadan/(mg/L)	0.007
79	Chlorpyrifos/(mg/L)	0.03
80	Glyphosate/(mg/L)	0.7
81	Dichlorvos/(mg/L)	0.001
82	Atrazine/(mg/L)	0.002
83	Deltamethrin/(mg/L)	0.02
84	2,4-D/(mg/L)	0.03
85	Acetochlor/(mg/L)	0.02

86	Pentachlorophenol/(mg/L)	0.009
87	2,4,6-Trichlorophenol/(mg/L)	0.2
88	Benzo (a) pyrene/(mg/L)	0.00001
89	Di (2-ethylhexyl) phthalate/(mg/L)	0.008
90	Acrylamide/(mg/L)	0.000 5
91	Epichlorohydrin/(mg/L)	0.0004
92	Microcystin LR (when algae outbreaks)/(mg/L)	0.001
III. Sensory traits and general chemical indicators [a]		
93	Sodium/(mg/L)	200
94	Volatile phenols (calculated as phenol)/(mg/L)	0.002
95	Anionic synthetic detergent/(mg/L)	0.3
96	2-methylisoborneol/(mg/L)	0.00001
97	Geosmin/(mg/L)	0.00001
a. When an emergency public event occurs that affects water quality, after risk assessment, the sensory properties and general chemical indicators can be temporarily loosened appropriately.		

5. Quality Requirements for Source of Drinking Water

5.1 When using surface water as source of drinking water, quality of the source water should comply with the requirements of GB 3838.

5.2 When using groundwater as source of drinking water, quality of the source water should comply with the requirements of Chapter 4 of GB/T 14848-2017.

5.3 When quality of the water source cannot meet the requirements of 5.1 or 5.2, it should not be used as the source for drinking water. However, when conditions are limited and need to be utilized, corresponding water purification processes should be used for treatment, and the treated water quality should meet requirements of this document.

6. Sanitation Requirements for Centralized Water Supply Unit

The sanitation requirements for centralized water supply units should comply with the provisions of "Hygienic Standard for Centralized Drinking Water Supply Units".

7. Sanitation Requirements for Secondary Water Supply

The facilities and treatment requirements for secondary water supply should comply with the provisions of GB 17051.

8. Sanitation Requirements for Products Related to Hygiene and Safety of Drinking Water

8.1 Chemical treatment agents such as flocculation, coagulation aid, disinfection, oxidation, adsorption, pH adjustment, rust prevention, and scale inhibition used in the treatment of drinking water should not pollute water and should comply with provisions of Chapter 3 of GB/T 17218-1998. Disinfectants and disinfection equipment should comply with provisions of the "Hygiene and Safety Evaluation Specification for Disinfectants and Disinfection Equipment for Drinking Water (Trial)".

8.2 The transmission and distribution equipment, protective materials, and water treatment materials for drinking water should not pollute water and should comply with provisions of Chapter 3 of GB/T 17219-1998.

9. Test Methods for Water Quality

The basic principles and requirements for water quality testing of each indicator shall be in accordance with GB/T 5750.1, collection and storage of water samples shall be in accordance with GB/T 5750.2, quality control of water quality analysis shall be in accordance with GB/T 5750.3, and corresponding testing methods shall be in accordance with GB/T 5750.4 -- GB/T 5750.13.

Appendix A
(Informative)
Reference Indices and Limits for Quality of Drinking Water

The reference indices and limit values of domestic drinking water quality are shown in Table A.1.

Table A.1: Reference Indicators and Limits of Drinking Water Quality

Serial No.	Index	Limit value
1	Enterococcus/ (CFU/100 mL or MPN/100 mL)	Should not be detected
2	Clostridium perfringens/ (CFU/100 mL)	Should not be detected
3	Vanadium/(mg/L)	0.01
4	Ethylmercury chloride/(mg/L)	0.000 1
5	Tetraethyl lead/(mg/L)	0.000 1
6	Hexachlorocyclohexane (total)/(mg/L)	0.005
7	Parathion/(mg/L)	0.003
8	Methyl parathion/(mg/L)	0.009
9	Lindane/(mg/L)	0.002
10	DDT/(mg/L)	0.001
11	Dipterex/(mg/L)	0.05
12	Methylthiophanate/(mg/L)	0.3
13	Isoprothiolane/(mg/L)	0.3
14	Trifluralin/(mg/L)	0.02
15	Metalaxyl /(mg/L)	0.05
16	Simetryne /(mg/L)	0.03
17	Acephate/(mg/L)	0.08
18	Formaldehyde/(mg/L)	0.9
19	Trichloroacetaldehyde/(mg/L)	0.1
20	Cyanogen chloride (calculated as CN^-)/(mg/L)	0.07
21	Nitrosodimethylamine/(mg/L)	0.000 1
22	Iodoacetic acid/(mg/L)	0.02
23	1,1,1-Trichloroethane/(mg/L)	2
24	1,2-dibromoethane/(mg/L)	0.000 05
25	Pentachloropropane/(mg/L)	0.03
26	Ethylbenzene/(mg/L)	0.3
27	1,2-Dichlorobenzene/(mg/L)	1
28	Nitrobenzene/(mg/L)	0.017
29	Bisphenol A/(mg/L)	0.01

Table A.1: Reference Indices and Limits of Drinking Water Quality (Continued)

Serial No.	Index	Limit value
30	Acrylonitrile/(mg/L)	0.1
31	Acrolein/(mg/L)	0.1
32	Glutaraldehyde/(mg/L)	0.07
33	Di (2-ethylhexyl) adipate/(mg/L)	0.4
34	Diethyl phthalate/(mg/L)	0.3
35	Dibutyl phthalate/(mg/L)	0.003
36	Polycyclic aromatic hydrocarbons(total)/(mg/L)	0.002
37	Polychlorinated biphenyls (total)/(mg/L)	0.000 5
38	Dioxin (2,3,7,8-Tetrachlorodibenzo-p-dioxin) /(mg/L)	0.000 000 03
39	Perfluorooctanoic acid/(mg/L)	0.000 08
40	Perfluorooctane sulfonic acid/(mg/L)	0.000 04
41	Acrylic acid/(mg/L)	0.5
42	Naphthenic acid/(mg/L)	1.0
43	Butyl xanthic acid/(mg/L)	0.001
44	β - Naphthol/(mg/L)	0.4
45	Dimethyl disulfide/(mg/L)	0.000 03
46	Dimethyl trisulfide/(mg/L)	0.000 03
47	Benzyl ether/(mg/L)	0.05
48	Petroleum (total)/(mg/L)	0.05
49	Total organic carbon/(mg/L)	5
50	Iodide/(mg/L)	0.1
51	Sulfide/(mg/L)	0.02
52	Nitrite (calculated as N)/(mg/L)	1
53	Asbestos (fiber>10 μ m) / (10 000 /L)	700
54	Uranium/(mg/L)	0.03
55	Radium-226/(Bq/L)	1

References:

[1] Hygienic Standard for Centralized Drinking Water Supply Units (Wei Fa Jian Fa [2001] No. 161)

[2] Hygiene and Safety Evaluation Specification for Disinfectants and Disinfection Equipment for Drinking Water (Trial) (Wei Jian Du Fa [2005] No. 336)

END OF TRANSLATION

Attachments:

No Attachments.