



National Standard of the People's Republic of China

GB 5749-2006
Replaces GB 5749-1985

Standards for Drinking Water Quality

生活饮用水卫生标准

- Released on 2006-12-29
- Implemented on 2007-07-01
- Issued by Ministry of Health

DISCLAIMER: The English version is an unofficial translation of the original in Chinese for information and reference purposes only. In case of a discrepancy the Chinese original standard will prevail.

Foreword

All technical contents of this standard are mandatory.

This standard replaces GB 5749-1985 Standards for Drinking Water Quality since the date of implementation.

Compared with GB 5749-1985, the main changes of this standard are as follows:

- The number of water quality indicators was added from 35 in GB 5749-1985 to 106, with an increase of 71; 8 were revised; among them:
 - a) Microbial indicators increased from 2 to 6, and escherichia coli, heat-resistant coliform bacteria, giardia and cryptosporidium were added; total coliform bacteria is revised;
 - b) Drinking water disinfectants increased from 1 to 4, and monochloramine, ozone and chlorine dioxide were added;
 - c) Inorganic compounds in toxicology index increased from 10 to 21 items, with bromate, chlorite, chlorate, antimony, barium, beryllium, boron, molybdenum, nickel, thallium and cyanogen chloride been added; Arsenic, cadmium, lead and nitrate were revised;
Organic compounds in toxicology index increased from 5 to 53, adding formaldehyde, trihalomethane, methylene chloride, 1,2-dichloroethane, 1,1,1-trichloroethane, bromoform, chlorodibromomethane, bromodichloromethane, epoxy chloropropane, vinyl chloride, 1,1-dichloroethylene, 1,2-dichloroethylene, trichloroethylene, tetrachloroethylene, hexachlorobutadiene, dichloroacetic acid, trichloroacetic acid, trichloroacetaldehyde, benzene, toluene, xylene, ethylbenzene, styrene, 2,4,6-trichlorophenol, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, trichlorobenzene, Bis(2-ethylhexyl) phthalate, acrylamide, micro capsule algal toxins-LR, bentazone, chlorothalonil, deltamethrin, dimethoate, 2,4-D, heptachlor, hexachlorobenzene, gamma-BHC, malathion, parathion, methyl parathion, pentachlorophenol, atrazine, carbofuran, chlorpyrifos, dichlorvos, glyphosate; carbon tetrachloride was revised;
 - d) Sensory properties and the general chemical index increased from 15 to 20 items, with oxygen consumption, ammonia nitrogen, sulfur, sodium and aluminum been added; turbidity was revised;
 - e) The total alpha radioactive indicator in radioactive indicators was revised.
 - The water source selection and water health protection parts were deleted.
 - Simplified water quality detection regulations of water supply departments; part of the contents has been listed in the Hygienic Standard for the Drinking Water Centralized Supply Unit.
 - Add Appendix A.
 - Add References.

The appendix A of this standard is an informative one.

The implementation and the date of the indicators in Table 3 Non-regular Water Quality Index and Limit of this standard are stipulated by the provincial governments according to the local actual situation, which should be submitted to the Standardization Administration of China, the Ministry of Development and the Ministry of Health for record. Since 2008, the three departments above will report the implementation situation of non-regular water quality indices of each province and all the indices should be implemented till July 1, 2012 at the latest.

This standard is proposed by the ministry of health, the ministry of development, ministry of water resources, the ministry of land and resources and ministry of environmental protection, etc.

This standard is centralized by the ministry of health of the People's Republic of China.

The standard is drafted by the Institute of Environmental Health and Product Safety Related, China CDC.

The units which participated in the drafting of this standard are: Health Supervision of Guangdong province, Health Supervision of Zhejiang province, Jiangsu Provincial Center for Disease Control and Prevention, Beijing Center for Disease Control and Prevention, Shanghai Center for Disease Control and Prevention, China Urban Water Association, China Institute of Water Resources and Hydropower Research, Environmental Standards Institute of the Ministry of Environmental Protection.

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This standard was firstly published in August, 1985 and this is the first revision.

Standards for Drinking Water Quality

1. Scopes

The sanitary requirements of the drinking water and its source, centralized water supply unit, secondary water supply and health security products related to drinking water as well as water quality monitoring and testing methods.

This standard applies to drinking water from all kinds of centralized water supply in urban and rural areas, and also applies to decentralized drinking water supply.

2. Normative references

The clauses of the following reference are essential to the Standard by reference. For dated references, the Standard only applies to the dated revisions. For undated references, the normative document (containing all modification lists) applies to the latest edition.

GB 3838 Environmental quality standards for surface water

GB/T 5750 (all parts) Test methods for drinking water standard

GB/T 14848 Quality standard for ground water

GB 17051 Hygienic specification for facilities of secondary water supply

GB/T 17218 Hygienic safety evaluation for chemicals used in drinking water treatment

GB/T 17219 Standard for safety evaluation of equipment and protective materials in drinking water system

CJ/T 206 Water quality standards for urban water supply

SL 308 Qualification standard for water supply works for villages and towns

Hygienic Standard for the Drinking Water Centralized Supply Unit Ministry of Health

3. Terms and definitions

The following terms and definitions apply to this standard

3.1 Drinking water

Water and domestic water for people to live.

3.2 Type of water supply

3.2.1 Central water supply

The method of getting water from the source and then deliver it to the user or public water supply spot through the water transport and distribution network, including self-built water supply facilities. The water supply stations providing daily drinking water for users and water supply for public places and residents community also belong to central water supply.

3.2.2 Secondary water supply

Centralized water goes through storage, high pressure and disinfection or deep processing once again before delivering to the users through pipes or containers.

3.2.3 Small central water supply

Daily water supply is less than 1000 m³ in rural area (or water supply population is under 10000).

3.2.4 Non-central water supply

Getting water directly from the water source by dispersive residents with no or just simple facilities.

3.3 Regular indices

The index that can reflect the basic drinking water quality.

3.4 Non-regular indices

Drinking water quality indices that need to be adopted according to the region, time or special circumstances.

4. Hygiene requirements for drinking water

4.1 The quality of drinking water should meet the following basic requirements to ensure the safety of users.

4.1.1 Pathogenic microorganisms should not be contained in the drinking water.

4.1.2 Chemicals in drinking water should not be harmful to human health.

4.1.3 Radioactive substances in drinking water should not be harmful to human health.

4.1.4 Sensory properties of drinking water should be good.

4.1.5 Drinking water should be through sterilization processing.

4.1.6 The drinking water quality shall meet the hygienic requirements in table 1 and table 3. The disinfectant limit of drinking water from centralized water supply factory and the disinfectant residue in the finished water and water in the end of pipe network shall meet the requirements in Table 2.

4.1.7 Due to some restrictions, some quality indices of water from small centralized and decentralized water supply should be temporarily implemented in accordance with Table 4. While the rest of the index should still refer to Table 1, 2 and 3.

4.1.8 In the event of unexpected public events impacting water quality, sensory properties and general chemical indicators can be eased appropriately with the approval of the municipal people's government at or above.

4.1.9 When drinking water contains the indicators listed in Table A.1 in Appendix A, the limit in this table can be referred to for evaluation.

Table 1 Regular water quality indicators and limits

indicators	Limits
1. Microbiological indicators^a	
Total coliform/ (MPN/100mL or CFU/100mL)	Not detected
Heat-resistant coliforms/ (MPN/100mL or CFU/100mL)	Not detected
Escherichia coli/ (MPN/100mL or CFU/100mL)	Not detected
Aerobic bacterial count/ (CFU/mL)	100
2. Toxicology indicators	
Arsenic/ (mg/L)	0.01
Cadmium/ (mg/L)	0.005
Chromium (6)/ (mg/L)	0.05
Lead/ (mg/L)	0.01
Mercury/ (mg/L)	0.001
Selenium/ (mg/L)	0.01
Cyanide/ (mg/L)	0.05
Fluoride/ (mg/L)	1.0
Nitrate (as N)/ (mg/L)	10 20 (when restricted by ground water)
Trichloromethane/ (mg/L)	0.06
carbon tetrachloride/ (mg/L)	0.002
Bromate (using O ₃) / (mg/L)	0.01
Formaldehyde (using O ₃) / (mg/L)	0.9
Chlorite (using chlorine dioxide for disinfection)/ (mg/L)	0.7
Chlorate (using compound chlorine dioxide for disinfection)/ (mg/L)	0.7
3. Sensory properties and general chemical indicators	
Chroma (platinum cobalt chromaticity unit)	15

Turbidity (scattering turbidity unit)/ NTU	1 3 (when restricted by water source and purification technology)
Smell	No abnormal odor
Visible substances	None
pH	≥6.5 and ≤8.5
Aluminum/ (mg/L)	0.2
Iron/ (mg/L)	0.3
Manganese/ (mg/L)	0.1
Copper/ (mg/L)	1.0
Zinc/ (mg/L)	1.0
Chloride/ (mg/L)	250
Sulfate/ (mg/L)	250
Total dissolved solids/ (mg/L)	1000
Total hardness (as CaCO ₃)/ (mg/L)	450
Oxygen consumption (COD _{Mn} , as O ₂)/ (mg/L)	3 5 (when restricted by water source and the original oxygen consumption>6mg/L)
Volatile phenols (as phenol) /(mg/L)	0.002
Anion synthetic detergent/ (mg/L)	0.3
4.Radioactivity index ^b	Guidance value
Total radioactivity α/ (Bq/L)	0.5
Total radioactivity β/ (Bq/L)	1
<p>^a MPN stands for most probable number; CFU stands for colony-forming unit. It is necessary to conduct further test about escherichia coli or heat-resistant coliform bacteria when total coliform bacteria is detected in the water samples; if total coliform bacteria is not detected in the water samples, there is no need to test escherichia coli or heat-resistant coliform bacteria</p> <p>^b if radioactive indicators are beyond guidance values, nuclide analysis and evaluation should be taken to determine whether the water can be drunk or not.</p>	

Table 2 Regular indicators and requirements of drinking water disinfectant

Disinfectant	Contacting time with water	Limits in finished water/ (mg/L)	Residue in finished water/(mg/L)	Residue in water in the end of pipe net/ (mg/L)
Chlorine and free chlorine preparation (free chlorine)	≥30min	4	≥0.3	≥0.05

Chloramine (total chloride)	≥120min	3	≥0.5	≥0.05
Ozone (O ₃)	≥12min	0.3	-	0.02 If chloramine is added, total chloride≥0.05
Chlorine dioxide (ClO ₂)	≥30min	0.8	≥0.1	≥0.02

Table 3 Non-regular water quality indicators and limits

Indicators	Limits
1. Microbiological indicators	
Giardia/ (per/10L)	<1
Cryptosporidium/ (per/10L)	<1
2. Toxicology index	
Antimony/ (mg/L)	0.005
Barium/ (mg/L)	0.7
Beryllium/ (mg/L)	0.002
Boron/ (mg/L)	0.5
Molybdenum/ (mg/L)	0.07
Nickel/ (mg/L)	0.02
Silver/ (mg/L)	0.05
Thallium/ (mg/L)	0.0001
Cyanogen chloride (asCN ⁻)/ (mg/L)	0.07
Chlorodibromomethane/ (mg/L)	0.1
Bromodichloromethane/ (mg/L)	0.06
dichloroacetic acid/ (mg/L)	0.05
1,2-dichloroethane/ (mg/L)	0.03
Methylene chloride/ (mg/L)	0.02
Trihalomethane/ (the total of chloroform, chlorodibromomethane, bromodichloromethane, and methyl bromide)	The sum of the ratio of the concentration of various compounds to their own limits should not exceed 1.
1,1,1- trichloroethane/ (mg/L)	2
Trichloroacetic acid/ (mg/L)	0.1
Trichloroacetaldehyde/ (mg/L)	0.01
2,4,6-trichlorophenol/ (mg/L)	0.2
Bromoform/ (mg/L)	0.1
Heptachlor/ (mg/L)	0.0004
Malathion (mg/L)	0.25
Pentachlorophenol (mg/L)	0.009
Hexachlorocyclohexane (total amount)/(mg/L)	0.005

Hexachlorobenzene (mg/L)	0.001
Dimethoate/ (mg/L)	0.08
Parathion/ (mg/L)	0.003
Bentazone/ (mg/L)	0.3
Methyl parathion (mg/L)	0.02
Chlorothalonil (mg/L)	0.01
Carbofuran (mg/L)	0.007
Gamma-BHC/ (mg/L)	0.002
Chlorpyrifos/ (mg/L)	0.03
Glyphosate/ (mg/L)	0.7
Dichlorvos/ (mg/L)	0.001
Atrazine/ (mg/L)	0.002
Deltamethrin/ (mg/L)	0.02
2,4-D/ (mg/L)	0.03
DDT (mg/L)	0.001
Ethylbenzene/ (mg/L)	0.3
Xylene (total amount)/ (mg/L)	0.5
1,1-dichloroethylene/ (mg/L)	0.03
1,2-dichloroethylene/ (mg/L)	0.05
1,2-dichlorobenzene/(mg/L)	1
1,4- dichlorobenzene/ (mg/L)	0.3
Trichloroethylene/ (mg/L)	0.07
Trichlorobenzene/ (total amount) (mg/L)	0.02
Hexachlorobutadiene/ (mg/L)	0.0006
Acrylamide/ (mg/L)	0.0005
Tetrachloroethylene/ (mg/L)	0.04
Methylbenzene(mg/L)	0.7
Bis(2-ethylhexyl) phthalate/ (mg/L)	0.008
Epichlorohydrin/ (mg/L)	0.0004
Benzene/ (mg/L)	0.01
Styrene/ (mg/L)	0.02
Benzo(a) pyrene/ (mg/L)	0.00001
Chloroethylene/ (mg/L)	0.005
Chlorobenzene/ (mg/L)	0.3
Micro capsule algal toxins-LR (mg/L)	0.001
3.Sensory properties and general chemical indicators	
Ammonia nitrogen (as N)/ (mg/L)	0.5
Sulfide/ (mg/L)	0.02
Sodium/(mg/L)	200

Table 4 Partial water quality indicators and limits of small centralized and decentralized water supply

Indicators	Limits
1. Microbiological indicators	
Aerobic bacterial count/ (CFU/mL)	500
2. Toxicology indicators	
Arsenic/ (mg/L)	0.05
Fluoride/ (mg/L)	1.2
Nitrate/ (as N)/ (mg/L)	20
3. Sensory properties and general chemical indicators	
Chroma (platinum cobalt chromaticity unit)	20
Turbidity (scattering turbidity unit)/NTU	3 5 (when restricted by water source and purification technology)
pH	≥ 6.5 and ≤ 9.5
Total dissolved solids (mg/L)	1500
Total hardness (as CaCO_3) / (mg/L)	550
Oxygen consumption (COD_{Mn} , as O_2) / (mg/L)	5
Iron (mg/L)	0.5
Manganese (mg/L)	0.3
Chloride (mg/L)	300
Sulfate (mg/L)	300

5. Hygiene requirements for the source of drinking water

5.1 When using surface water as domestic and drinking water sources, it should meet the requirements of GB 3838.

5.2 When using groundwater as drinking water sources, the requirements of GB/T 14848 should be complied with.

6. Hygiene requirements for centralized water supply unit

The Sanitation requirements of centralized water supply unit should refer to Hygienic Standard for the Drinking Water Centralized Supply Unit promulgated Ministry of Health.

7. Hygiene requirements for secondary water supply

Secondary water supply facilities and treatment requirements shall refer to the GB 17051.

8. Hygiene requirements for health security products related to drinking water

8.1 Chemical treatment agents with the functions of flocculation, coagulation, disinfection, oxidation, and adsorption, pH adjustment, rust prevention, anti-scaling, etc. which are used for treating the drink water should not pollute the water, and shall also meet the requirements of GB/T 17218.

8.2 Water transport and distribution equipment, protective materials and treatment materials of drinking water should not pollute drinking water and comply with the requirements of GB/T 17219.

9. Water quality monitoring

9.1 Water quality detection of the water supply unit

9.1.1 Non-regular water quality indicators of water supply unit should be decided after the negotiation between local water supply administrative department at or above the county level and the administrative department of health.

9.1.2 Sampling point selection, inspection items and frequency as well as the calculation of the percent of pass of the water detection of urban centralized water supply unit shall be carried out in accordance with CJ/T 206.

9.1.3 Test sampling site selection, inspection items and frequency as well as the calculation of the percent of pass of the water detection of centralized water supply unit in villages and towns shall be carried out in accordance with SL 308.

9.1.4 Test results of the water of the water supply unit should be submitted to the local administrative department of health regularly; the contents and method that submitted should be agreed upon by the local administrative department of water supply and the health administrative department.

9.1.5 When the quality of drinking water is abnormal, it should be reported to the local water supply administrative department and the administrative department of health in time.

9.2 Water quality monitoring of health supervision

9.2.1 The health administrative departments at all levels should periodically implement water quality supervision and monitoring towards all kinds of water supply units according to the actual need.

9.2.2 In the event of unexpected public events impacting water quality, the health administrative department at or above the county level shall make plans on drinking water supervision and monitoring according to needs.

9.2.3 Water quality monitoring scope, project, frequency of health supervision should be determined by the health administrative department at or above the local municipal.

10. Water quality test methods

The inspection of drinking water quality should be in accordance with GB/T 5750 (all parts).

Appendix A
(Informative appendices)
Drinking water quality reference indices and limits

Table A.1 Drinking water quality reference indices and limits

Indicators	Limits
Enterococcus/ (CFU/100mL)	0
Clostridium perfringens/ (CFU/100mL)	0
Bis(2-ethylhexyl) adipate/ (mg/L)	0.4
Ethylene Dibromide/ (mg/L)	0.00005
Dioxin (2,3,7,8-TCDD)/ (mg/L)	0.00000003
Geosmin/ (mg/L)	0.00001
Pentachloropropane/ (mg/L)	0.03
bisphenol A/ (mg/L)	0.01
Acrylonitrile/ (mg/L)	0.1
Propenoic acid/(mg/L)	0.5
Acrolein/ (mg/L)	0.1
Lead tetraethyl/ (mg/L)	0.0001
Glutaraldehyde/ (mg/L)	0.07
Methyl leftover alcohol-2/ (mg/L)	0.00001
Petroleum (total amount)/ (mg/L)	0.3
Asbestos (>10 μ m) (ten thousand/L)	700
Nitrite (mg/L)	1
Polycyclic aromatic hydrocarbon (total amount)/ (mg/L)	0.002
Polychlorinated biphenyl (total amount)/ (mg/L)	0.0005
Diethyl phthalate/ (mg/L)	0.3
Dibutyl phthalate/ (mg/L)	0.003
Naphthenic acid/ (mg/L)	1.0
Anisole/ (mg/L)	0.05

Total organic carbon (TOC)/(mg/L)	5
Naphthol- β / (mg/L)	0.4
Butyl xanthate/ (mg/L)	0.001
Ethylmercuric chloride/ (mg/L)	0.0001
Nitrobenzene/ (mg/L)	0.017

References

- [1] World Health Organization. Guidelines for Drinking-water Quality, third edition. Vol. 1, 2004, Geneva.
- [2] EU's Drinking Water Standards. Council Directive 98/83/EC on the quality of water intended for human consumption. Adopted by the Council, on 3 November 1998.
- [3] US EPA. Drinking Water Standards and Health Advisories, Winter 2004.
- [4] Russia drinking water hygiene standard, implemented from Jan 2002.
- [5] Japan drinking water quality standard, implemented from Apr 2004.