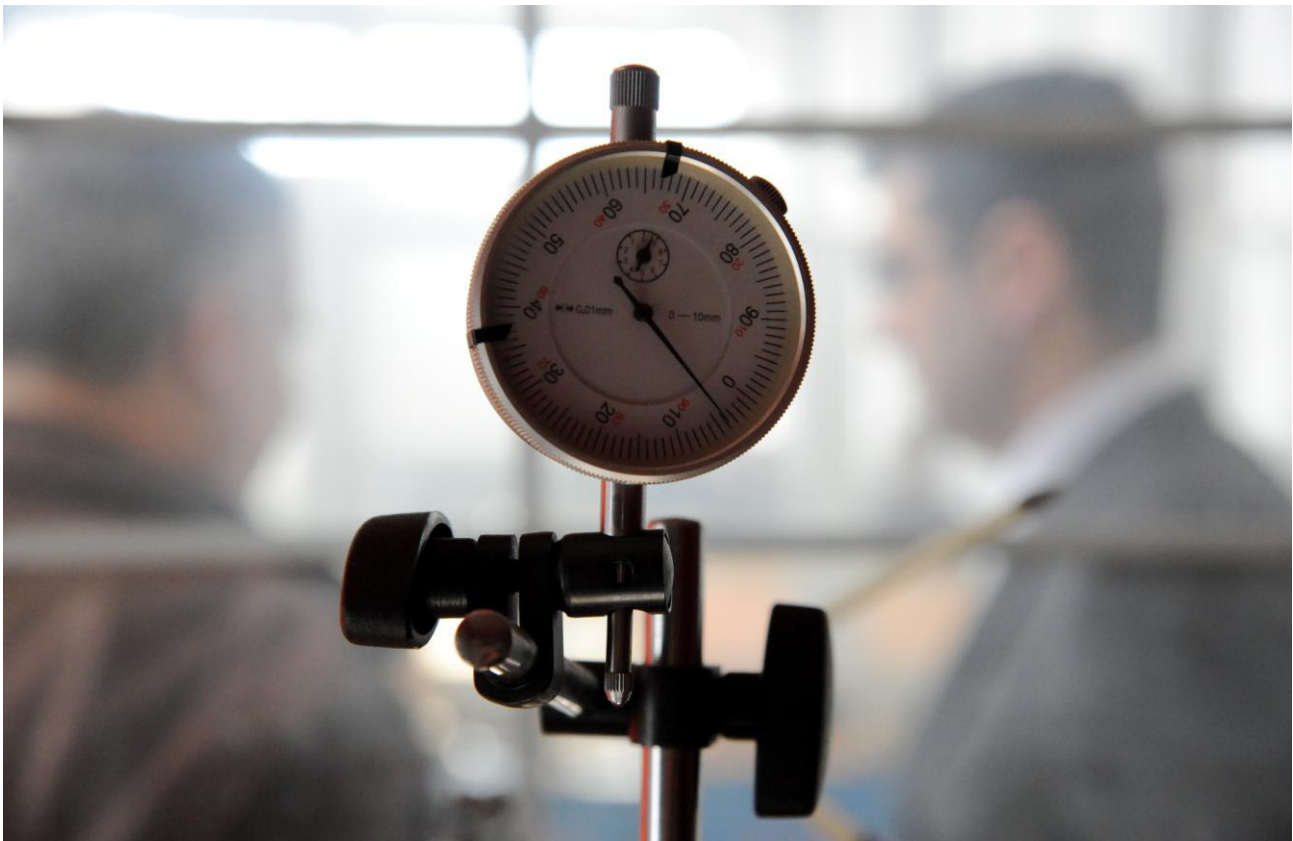


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GB 5749-2006

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National Standard of the People's Republic of China

GB 5749-2006

Replaces GB 5794-1985

Standards for drinking water quality

Issue Date: Dec.29th, 2006

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Issued by Ministry of Health of the People's Republic of China and Standardization Administration of the People's Republic of China

Foreword

All provisions in this standard are mandatory.

This standard replaces GB 5749-1985, Standards for drinking water quality from the date of implementation.

The main differences between GB 5749-1985 and this Standard are:

----Water quality indices have been increased from 35 to 106, 71 of them added and 8 of them revised, including:

a) Microorganism indices have been increased from 2 to 6. Indices of *Escherichia coli*, Thermotolerant Coliform, *Giardia*, *Cryptosporidium* have been added. Index of total Coliform group has been revised.

b) Drinking water disinfectants have been increased from 1 to 4. Indices of monochloramine, ozone, chlorine dioxide have been added.

c) Toxicological indices of inorganic compounds have been increased from 10 to 21. Indices of bromate, chlorite, chlorate, antimony, barium, beryllium, boron, molybdenum, nickel, thallium, cyanogen chloride have been added. Indices of arsenic, cadmium, lead, nitrate have been revised.

Toxicological indices of organic compounds have been increased from 5 to 53. Indices of formaldehyde, trihalomethanes, dichloromethane, 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, trichloroacetic aldehyde, benzene, methylbenzene, dimethylbenzene, ethylbenzene, styrene, 2,4,6-trichlorophenol, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, trichlorobenzene, DEHP, acrylamide, microcystin toxins-LR, bentazone, chlorothalonil, deltamethrin, dimethoate, 2,4-dichlorophenoxyacetic acid, heptachlor, hexachlorobenzene, lindane, malathion, parathion, parathion-methyl, pentachlorophenol, atrazine, carbofuran, chlorpyrifos, dichlorvos, glyphosate had been added. Index of tetrachloromethane has been revised.

d) Indices of sensitive properties and general chemical have been increased from 15 to 20. Indices of oxygen consumption, ammonia nitrogen, sulfide, sodium, aluminum have been added. Indices of turbidity have been revised.

e) Radioactivity index of α has been revised.

-----The contents of selection and hygiene protection of water source have been removed.

-----The provisions for water quality testing of water supply agent have been simplified, some indices have been listed in standard of "*hygiene practices of drinking water in central water supply sector*".

-----Annex A has been added.

---- References have been added.

Annex A in this standard is informative.

The projects and dates which are stipulated in *table 3 irregular indices of water quality and the limitations* of this standard, will be decided by provincial government according to local situation and will be reported to Standardization Administration of the People's Republic of China, Ministry of Construction of the People's Republic of China, Ministry of health of People's Republic of China. The non-regular indices of all provinces should be notified to the three bodies above since 2008. All of the indices must be implemented before July 1st, 2012.

This standard is proposed by Ministry of health of PRC, Ministry of Construction of PRC, the Ministry of Water Resources of PRC, Ministry of Land and Resources of PRC and Ministry of Environmental Protection of PRC.

The standard is under jurisdiction of Ministry of health of PRC.

The department responsible for the drafting of this standard is Institute of Environmental Health and Related Product Safety, China CDC.

The main organizations that participated in the drafting of this standard are:

- Health supervision of Guangdong province
- Zhejiang Agency for Public Health Inspection
- Jiangsu Provincial Center for Disease Prevention and Control
- Beijing Center for Diseases Prevention and Control
- Shanghai Municipal Center for Disease Control & Prevention
- China Urban Water Association
- China Institute of Water Resources and Hydropower Research
- Chinese Research and Academy of Environmental Sciences

Main drafters of this standard: Jin Yinlong, E Xueli, Chen Changjie, Chen Xiping, Zhang Lan, Chen Yayan, Cai Zugen, Gan Rihua, Shen Tuhang, Guo Changyi, Wei Jianrong, Ning Ruizhu, Liu Wenchao, Hu Linlin.

Participating drafters: Cai Shiwen, Lin Shaobin, Liufan, Yao Xiaoyuan, Lu Kunming, Chen Guoguang, Zhou Huandong, Li Yanping.

The standard was first issued in August, 1985 . This is the first version.

Standards for drinking water quality

1. Scope

This standard specifies requirements for drinking water quality, drinking water source quality, central water supply organizations, secondary water supply and products related to health and safety of drinking water, methods for inspection and testing of water quality.

This standard is applicable to drinking water by central water supply in cities and countries. It also applies to drinking water by non-central water supply.

2. Normative references

The following documents contain provisions which, through reference in this standard, constitute provisions of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. However, it is encouraged for each party entering agreement according to this standard to decide whether to use the latest versions of these documents. In addition, the latest versions of all reference documents without dates are applicable to the standard

GB 3838 Quality standards for surface water environment

GB/T 5750(all parts) Methods for test for drinking water

GB/T 14848 Quality standards for underground water

GB17051 Hygienic specifications for secondary water supply devices

GB/T 17218 Safety evaluation of drinking water chemical treatment

GB/T 17219 Standards for Safety evaluation of equipment and protective materials in drinking water system

CJ/T 206 Standards for water supply quality in cities

SL 308 Standards for qualification of water supply sector in villages and small town

Hygiene specification of drinking water central water supply sector

Ministry of health

3. Terms and Definitions

The following terms and definitions are applicable to this standard:

3.1 Drinking water

It refers to water for drinking and daily use.

3.2 Type of water supply

3.2.1 Central water supply

Water is supplied from water source to end users or public watering points through water distribution network, including self-built water supply facilities. Water

distributing station supplying daily drinking water for users and the dual water supply served for public area and residential areas are also included in central water supply.

3.2.2 Secondary water supply

Before entering into the families, central water supply, after re-storage, pressurization and sterilization or advanced treatment, is delivered to the users through pipeline or vessels.

3.2.3 Small central water supply

In rural areas, central water supply with volume of daily water supply which is less than 1000m³ (or the water-covered population is less than 10,000) can be considered as **small central water supply**.

3.2.4 Non-central water supply

Decentralized users directly fetch water from the water source, without any facilities or just with simple facilities.

3.3 Regular indices

The water-quality indices that can reflect the basic water quality of drinking water

3.4 Non-regular indices

The water-quality indices of drinking water in special regions, times and cases

4 .Sanitary requirements for drinking water quality

4.1 Drinking water quality should satisfy the following basic sanitary requirements so as to ensure the drinking safety for users.

4.1.1 The drinking water shall be free of pathogenic microorganisms.

4.1.2 Drinking water shall contain no human health-endangered chemicals.

4.1.3 Drinking water shall contain no human health-endangered radioactive substances

4.1.4 The sensory property of drinking water shall be acceptable.

4.1.5 The drinking water shall be sterilized.

4.1.6 The drinking water quality shall conform to the sanitary requirements stated in Table 1 and Table 3.

Disinfectant limitation of tap water for central water supply and water disinfectant surplus of the pipeline terminal shall conform to the requirements of Table 2 .

4.1.7 Due to the limitation of conditions, the indices for the water quality of small central water supply and non-central water supply can refer to Table 3 and the rest indices can refer to Table1, 2 and 3.

4.1.8 When any public incident the water quality, any test whose result fails to meet requirements of sensory property and general chemical index is acceptable upon the approval from municipal government or above.

4.1.9 When the drinking water contains the indices listed in Table A.1, the assessment can make reference from the limitation of this table.

Table 1 Regular index of water quality and their limitations

Index	Limitation
1、 Microorganism indices	
Total coliform group (MPN/100mL or CFU/100mL)	Not detected
Thermotolerant coliform group (MPN/100mL or CFU/100mL)	Not detected
Escherichia coli (MPN/100mL or CFU/100mL)	Not detected
Total bacteria count (CFU/mL)	100
2、 Toxicological indices	
As (mg/L)	0.01
Cd (mg/L)	0.005
Cr (sexavalence, mg/L)	0.05
Pb (mg/L)	0.01
Hg (mg/L)	0.001
Se (mg/L)	0.01
Cyanidum (mg/L)	0.05
Fluoride (mg/L)	1.0
Nitrate (counted as "N", mg/L)	10 If the groundwater source is confined, then 20
Chloroform (mg/L)	0.06
Carbon tetrachloride(mg/L)	0.002
Bromate (when using ozone, mg/L)	0.01
Formaldehyde (when using ozone, mg/L)	0.9
Chlorite (when using chlorine dioxide for sterilization, mg/L)	0.7
Chlorite (when using composite chlorine dioxide for sterilization, mg/L)	0.7
3、 Sensitive properties and general chemical indices	
Chroma (platinum/cobalt chroma unit)	15
Turbidness (nephelometric turbidity unit, NTU)	1 If confined by water source and water

	purification conditions, then 3
Odor and sapor	Free from abnormal odor and sapor
Visible matters (unaided eye)	No
pH	Not less than 6.5 and not larger than 8.5
Al (mg/L)	0.2
Fe (mg/L)	0.3
Mn (mg/L)	0.1
Cu (mg/L)	1.0
Zn (mg/L)	1.0
Chloride (mg/L)	250
Sulfate (mg/L)	250
Total soluble solid (mg/L)	1000
Total hardness (counted as CaCO ₃ , mg/L)	450
Oxygen consumption (COD _{Mn} method, counted as O ₂ , mg/L)	3 Restrict in the water source, if untreated water oxygen consumption >6mg/L, then 5
Volatile phenol (counted as phenol, mg/L)	0.002
Anion synthetic detergent (mg/L)	0.3
4、Radioactive indices^②	Guidance value
Total α radioactivity (Bq/L)	0.5
Total β radioactivity (Bq/L)	1
<p>①MPN means most probable number; CFU means colony forming unit. If total coliform group is detected in the water sample, Escherichia coli or heat resisting coliform group shall be examined further; if total coliform group is not detected, then it's not necessary to examine Escherichia coli or heat resisting coliform group.</p> <p>②If the radioactive index exceed the guidance value, then it's necessary to analyze and evaluate the nuclide and to judge whether it's drinkable or not.</p>	

Table 2 Regular indices and requirements on disinfectant of drinking water

Disinfectant	Time exposed to water	Ex-works in-water limitation	Ex-works in-water surplus	Pipeline terminal in-water surplus
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Chlorine gas and free chlorine preparation (free chlorine)	≥30min	4	≥0.3	≥0.05
Monochloro amine (total chlorine)	≥120min	3	≥0.5	≥0.05
Ozone (O ₃)	≥12min	0.3		0.02 If add chlorine, then the total chlorine≥0.05
Chlorine dioxide(ClO ₂)	≥30min	0.8	≥0.1	≥0.02

Table 3 Non-regular indices and limitations of water quality

Index	Limitation
1、 Microorganism indices	
Giardia (pcs/10L)	<1
Cryptosporidium (pcs/10L)	<1
2、 Toxicological indices	
Sb/ (mg/L)	0.005
Ba/ (mg/L)	0.7
Be/ (mg/L)	0.002
B/ (mg/L)	0.5
Mo/ (mg/L)	0.07
Ni/ (mg/L)	0.02
Ag/ (mg/L)	0.05
Tl/ (mg/L)	0.0001
Cyanogen chloride (counted as CN)/(mg/L)	0.07
Chlorodibromomethane/ (mg/L)	0.1
Monobromo-dichloro-methane/(mg/L)	0.06
Dichloroacetic acid/ (mg/L)	0.05
1,2-dichloro-methane/(mg/L)	0.03
Dichloromethane/ (mg/L)	0.02

Trihalomethane (summation of chloroform, chlorodibromomethane, monobromo-dichloro-methane and bromoform)	The ratio of the measured concentration of all kinds compounds to their limitations shall not exceed 1
1,1,1-Trichloroethane/(mg/L)	2
Trichloroacetic acid /(mg/L)	0.1
Trichloroacetaldehyde/ (mg/L)	0.01
2,4,6-Trichloroacetaldehyde/ (mg/L)	0.2
Bromoform/ (mg/L)	0.1
Heptachlor/ (mg/L)	0.0004
Malathion/ (mg/L)	0.25
Pentachlorophenol/ (mg/L)	0.009
Benzene hexachloride (total) / (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
Furadan/ (mg/L)	0.007
Lindane/ (mg/L)	0.002
Chlorpyrifos/ (mg/L)	0.03
Glyphosate/ (mg/L)	0.7
Equigard/ (mg/L)	0.001
Atrazine/ (mg/L)	0.002
Deltamethrin/ (mg/L)	0.02
2,4-Dichlorophenoxyacetic acid/ (mg/L)	0.03
Dicophane(DDT) / (mg/L)	0.001
Ethylbenzene/ (mg/L)	0.3
Xylene(total) / (mg/L)	0.5
1,1-Dichloroethylene/ (mg/L)	0.03
1,2-Dichloroethylene/ (mg/L)	0.05
1,2-Dichlorobezene (mg/L)	1
1,4-Dichlorobezene (mg/L)	0.3
Trichloroethylene / (mg/L)	0.07
Trichlorobezene/ (mg/L)	0.02

Hexachlorobutadiene/ (mg/L)	0.0006
Acrylamide/ (mg/L)	0.0005
Tetrachloroethylene/ (mg/L)	0.04
Toluene/ (mg/L)	0.7
Dinbutyl phthalate(2-ethylhexyl) ester/ (mg/L)	0.008
Epoxy chloropropane/ (mg/L)	0.0004
Benzebe/ (mg/L)	0.01
Styrene/ (mg/L)	0.02
Benzo(a)-pyrene/ (mg/L)	0.00001
Vinyl chloride/ (mg/L)	0.005
Chlorobenzene/ (mg/L)	0.3
Microcystin-LR/ (mg/L)	0.001
3、 Sensitive properties and general chemical indices	
Ammonia nitrogen (counted as N) / (mg/L)	0.5
Sulfide/ (mg/L)	0.02
Na/ (mg/L)	200

Table 4 Water-quality indices and limitations of small central water supply and non-central water supply

Index	Limitation
1、 Microorganism index	
Total bacteria count (CFU/mL)	500
2、 Toxicological indices	
As(mg/L)	0.05
Fluoride(mg/L)	1.2
Nitrate (counted as N, mg/L)	20
3、 Sensitive property and general chemical index	
Chroma (platinum/cobalt chroma unit)	20
Turbidness (nephelometric turbidity unit/ NTU)	3 If confined by the technical conditions of water source and pure water, then 5
PH	Not less than 6.5, and not larger than 9.5
Total soluble solid (mg/L)	1500

Total hardness (counted as CaCO ₃ , mg/L)	550
Oxygen consumption (CODMn method, counted as O ₂ , mg/L)	5
Fe(mg/L)	0.5
Mn(mg/L)	0.3
Chloride(mg/L)	300
Sulfate(mg/L)	300

5 Hygienic requirements of the drinking water source quality

5.1 The surface water adopted as drinking water source shall conform to the requirements of GB 3838.

5.2 The ground water adopted as drinking water source shall conform to the requirements of GB/T14848.

6 Hygienic requirements on central water supply organizations

The **hygienic** requirements on central water supply organizations shall conform to the specifications for central drinking water supply organizations issued by the Ministry of Health of the People's Republic of China.

7 Hygienic requirements of secondary water supply

The facilities and treatments of secondary water supply shall conform to the requirements of GB 17051.

8. Hygienic requirements on health and safety related products of drinking water

8.1 Treatment chemicals for flocculation, flocculation acceleration, sterilization, oxygenation, absorptions, pH adjustment, antirust and anti-precipitation of drinking water shall not pollute the drinking water and shall conform to the requirements of GB/T 17218.

8.2 The distribution equipment, protective material and water treatment material of drinking water shall not pollute the drinking water and shall conform to the requirements of GB/T 17219.

9 Water quality monitoring

9.1 Water quality supply detection of water supply organizations

Water quality supply detection of water supply organizations shall meet the following requirements.

9.1.1 The selection of non-regular indices shall be ascertained by water supply authority and health authority above county level.

9.1.2 The sampling point selection, inspection item/frequency and qualification rate calculation of urban central water supply organizations shall conform to CJ/T 206.

9.1.3 The sampling point selection, inspection item/frequency and qualification rate calculation of rural central water supply organizations shall conform to CJ/T 206.

9.1.4 The water quality detection results of water supply organizations shall regularly submitted to the local health authority and the content and submitting method herein shall be ascertained by local water supply authority and health authority.

9.1.5 When exceptional conditions occur to water quality of drinking water, such conditions shall be timely reported to the local water supply authority and health authority.

9.2 Water quality monitoring for health supervision

Water quality monitoring for health supervision shall meet the following requirements.

9.2.1 At all levels, the health authority shall carry out health supervision and monitoring for the water quality of the water supplied by all kinds of water supply organizations regularly according to the actual demands.

9.2.2 When any public incident affects the water quality, the drinking water supervision and monitoring proposals shall be ascertained by health authority above county level as required.

9.2.3 The scope, item and frequency of water quality monitoring shall be ascertained by health authority above county level.

10 Water examination methods

The examination of drinking water quality shall be carried out according to all the provisions of GB/T 5750.

Appendix A

(Reference Appendix)

Table A.1 Reference indices and limitation of drinking water quality

Index	Limitation
Enterococcus(CFU/100mL)	0
Clostridium porringers (CFU/100mL)	0
2 (2-ethylhexyl) adipic acid ester (mg/L)	0.4
Ethylene Dibromide (mg /L)	0.00005
Dioxin 2,3,7,8-TCDD(mg/L)	0.00000003
Geosmin (dimethylnaphthalene alkanol, mg /L)	0.00001
Petachloro-propane(mg/L)	0.03
Bisphenol A (mg /L)	0.01
Acrylonitrile (mg /L)	0.1
Crylic acid (mg /L)	0.5

Acrolein (mg /L)	0.1
Tetraethyl Lead (mg /L)	0.0001
Glutaraldehyhde (mg /L)	0.07
2-methylisoborneol(mg /L)	0.00001
Petroleum (gross,mg /L)	0.3
Asbestos (>10 µm10,000 unit/L)	700
Nitrite (mg/L)	1
Polycyclic aromatic hydrocarbon (gross, mg /L)	0.002
Polychlorinated biphenyls (gross, 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
	0.4
Butyle xanthogen (mg/L)	0.001
Ethyl mercuric 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] Russian Drinking Water Standards, implemented in Jan, 2002.
- [5] Japanese Drinking Water Standard, implemented in April, 2004.

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