

Annexure IV : Drinking Water Quality Standards

Table 1: Organoleptic and Physical Parameters (Clause 4)

Sr (1)	BIS – 10500 (2004-2005)						CPHEEO (1998)		BIS-10500 (1991)		WHO Health based Guidelines		EU (1998) Para - metric Values	USEPA (June 2003)	Reasons for Inclusion Or Change	Sources of Contami- nation / Entry in Water body
	Subst- ance Or Chara- cteris- tics (2)	Require- ment (Desire- able limit) (3 ®)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Reject- ion	3®	5♦	1993	2006				
1	Colour, Hazen Units, Max	5	Above 5, Consumer acceptance decreases	25	3025 (Part 4) *Visual Comparis on Co-Pt scale	Extended to 25 only if toxic substances are not suspected, in absences of alternate sources	5.0	25	NC	NC	Desirable 15	NM	Acceptable to consumer and no abnormal change in appearance	15 (Color Units)	NA	Industrial Wastewater, Color organic matter, natural impurities, corrosion
2	Odor	Agreeable	-	Agreeable	3025 (Part 5) *Threshol d Odor test *Olfacto- meter *Human sense	a) Test cold and when heated b) Test at several dilution	Unobject- ionable	Objectio- nable	Unobject- ionable	NM	-	-	Acceptable to consumer and no abnormal change as far as smell (Olphact- rometrically)	3 Threshold Odor Number	Termino- logy changed as per Latest Convention	Sewage, Effluent, synthetic chemical, natural inorganic and organic contaminant and biological sources or processes.

® Changes in Revised BIS 10500 2004-2005

® ♦ Changes in Revised BIS 10500 2004-2005

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	Subst- ance Or Chara- cteris- tics (2)	Require- ment (Desire- able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Reject- ion	3 ⊗	5 ♦	1993	2006		MCLG	MCL or TT		
3	Taste	Agreeable	-	Agreeable	3025 (Part 7 & 8) Flavor Threshold test	Test to be conducted only after safety has been established	Unobject- ionable	Object- ionable	NC	NC	-	-	Acceptable to consumer and no abnormal change in taste	-	-	-	Synthetic chemical, natural inorganic and organic contaminant and biological sources or processes.
4	Turbi- dity, NTU	5	Above 5, consumer acceptance decreases	10	3025 (Part 10) Nephelo- metric	-	1.0	10	NC	NC	<5	NM	Acceptable to consumer and no change	MCLG	MCL or TT	May permit growth of disease causing organisms	Soil Runoff, Particulate matter, inadequate filtration, inorganic matter.
5	Dissolv ed Solids mg/l	500	Beyond this palatability decreases and may cause gastro intestinal irritations	2000	3025 (Part 16) Evapo- ration	-	500	2000	NC	NC	NG	NG	NM	500		Scaling in water pipelines, boilers, gastro intestinal irritation	Soil runoff and erosion

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	Subst- ance Or Chara- cteris- tics (2)	Require- ment (Desire- able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Reject- ion	3 ⊗	5 ♦	1993	2006				
6	pH Value	6.5-8.5	Beyond this range the water will affect the mucus membrane and/or water supply system	No relaxation	3025 (Part 11) Electro- metric By pH meter	-	7.0-8.5	<6.5 or >9.2	NC	NC	6.5- 8.5	NG	>6.5 and <9.5	6.5-8.5	Corrosion of water pipes and household water systems E	Change in pH due to accidental spillage,
7	Total hardnes s (as CaCO3) mg/l Max	300	Encrustation in water supply structure and adverse effects on domestic use	600	3025 (Part 21) EDTA	-	200	600	NC	NC	150- 500	NG	NM	-	Scale deposition in pipelines, excessive soap consumpti on E	Dissolution of Natural rock, erosion

Table 2 : General Parameters Concerning Substances Undesirable in Excessive Amounts (Clause 4)

Sr (1)	BIS – 10500 (2004-2005)						CPHEEO (1998)		BIS-10500 (1991)		WHO Health based Guidelines		EU (1998) Para - metric Values	USEPA (June 2003)		Reasons for Inclusion Or Change	Sources of Contamination / Entry in Water Body
	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ®)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Rejection	3®	5 ♦	1993	2006		MC LG	MCL /TT		
1	Copper (as Cu) mg/l, Max	0.05	Astringent taste, discoloration and corrosion of pipes, fittings, and utensils will be caused beyond this	1.5	3025 (Part 42) *ICP *Colori-metric Neocu-proine	-	0.05	1.5	NC	NC	2	2	2	MC LG 1.3	MCL /TT TT 8 Action level = 1.3	Gastro intestinal distress, liver/ kidney damage	Corrosion, Erosion from copper pipes
2	Iron (as Fe) mg/l, Max	0.3	Beyond this limit taste/ appearance are affected, has adverse effect on domestic uses and water supply structures, and promotes iron bacteria	1.0	3025 (Part 53) * ICP *Colori-metric Phenan-throline		0.1	1.0	NC	NC	0.3	NG	0.2	0.3 mg/l		Promotes growth of iron bacteria, accumulation of deposits in distribution systems E	Soil runoff, erosion, mine waste
3	Manga nese (as Mn) mg/l, Max		Beyond this limit taste/ appearance are affected, has adverse effect on domestic uses and water supply structures	0.3	35 of 3025 *ICP *Per-sulphate	-	0.05	0.5	NC	NC	0.5	0.4	0.05	0.05		Neurological effet, essential micro nutrient	Industrial wastes, steel alloys, Batteries

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Sr (1)	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ®)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Rejection	3®	5 ♦	1993	2006					
4	Nitrate (as NO ₃) mg/l, Max	45	Beyond this methaemoglobinemia take place/ may be indicative of pollution	No relaxation	3025 (Part 34) UV- *Spectrophotometer *Phenol-Di-sulphonic acid	-	45	45	NC	100	50 Total nitrogen	50	50	Measured as nitrogen MCLG 10	MCL or TT 10	Blue baby syndrome	Fertilizer runoff, erosions, leaching from sewage
5	Fluoride (as F) mg/l, Max	1.0	Fluoride may be kept as low as possible. High fluoride may cause fluorosis	1.5	23 of 3025 Ø *Ion selective electrode *SPDAN S	-	1.0	1.5	NC	NC	1.5	1.5 1	1.5	2.0 mg/l	Fluorosis	Industrial wastes	

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	Substance Or Characteristics (2)	Requirement (Desirable limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Rejection	3 ⊗	5 ♦	1993	2006				
6	Zinc (as Zn) mg/l, Max	5	Beyond this limit it can cause astringent taste and an opalescence in water	15	3025 (Part 49) *Zincon	-	5.0	15	NC	NC	3.0	NG	NM	5.0	Astringent taste to water, develops a greasy film on boiling	Industrial waste
7	Aluminum (as Al) mg/l, Max	0.03	Cumulative effect is reported to cause dementia	0.2	3025 (Part 49) *ICP *Erichrome Cyanine R	-	0.03	0.2	NC	NC	0.2	0.2	0.2	0.05-0.2	Dementia, Alzheimer disease	Mining runoff, erosion from naturally occurring aluminum and aluminum salts
8	Chlorides (as Cl) mg/l, Max	250	Beyond this limit, taste, corrosion and palatability are affected.	1000	3025 (Part 32) *Argentometric	-	200	1000	NC	NC	250	NG	250	250	Corrosion of metals in distribution systems	Sewage, industrial effluent runoff, natural sources
9	Selenium (as Se) mg/l, Max	0.01	Beyond this, the water become toxic	No relaxation	3025 (Part 56) *ICP *Colorimetric		0.01	0.01	NC	NC	0.01	0.01	0.01	MC LG MCL or TT	Circulatory problems	discharge from Mine, petroleum refineries, erosion

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	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Rejection	3⊗	5♦	1993	2006				
10	Sulphate (as SO ₄) mg/l, Max	200	Beyond this causes gastro intestinal irritation when Mg or Na are present	400 (see col 7)	3025 (Part 24) *Turbidi-metric	May be extended up to 400 provided that Mg does not exceed 30	200	400	NC	NC	500	NG	250	250	Gastro intestinal irritations, laxative effect	Leaching from sulphite ore, industrial wastes
11	Alkalinity as CaCO ₃ , mg/l, Max	200	Beyond this limit taste becomes unpleasant	600	3025 (Part 23) *Titri-metric	-	200	600	NC	NC	-	-	-	-		
12	Calcium (as Ca) mg/l, Max	75	Encrustation in water supply structure and adverse effect on domestic use	200	3025 (Part 40) ⊕ *AAS *ICP *EDTA titrimetric	-	75	200	NC	NC	-	-	-	-	Corrosive	Leaching from Ca ores
13	Magnesium (as Mg) mg/l, Max	30	Encrustation in water supply structure and adverse effect on domestic use	100	3025 (Part 46) ⊕ *AAS *ICP *Gravi-metric	-	<=30	150	Newly added -	-	-	-	-	Laxative if SO ₄ is more	Leaching from Mg ores	

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	Subst- ance Or Chara- cteris- tics (2)	Require- ment (Desire- able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Acceptable	Cause of Reject- ion	3⊗	5♦	1993	2006				
14	Residu- al, free Chlorin e, mg/l, Min	0.2	-	1	3025 (Part 26) *Iodome tric *DPD	To be applicable only water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l	0.2	> 1.0	NC	NC	-	-	-	-	Harms growing plant. Alter taste	Leakage of salt water, industrial process
15	Phenolic compo und (as C6H5 OH) mg/l, Max	0.001	Beyond this, it may cause objectionable taste and odour	0.002	3025 (Part 43) *Chlorof orm Extractio n Direct photomet ric	-	0.001	0.002	NC	NC	-	-	-	-	Odoriferrous Toxic	Industrial Waste, Oil and Grease waste
16	Mineral Oil mg/l, Max	0.01	Beyond this limit undesirable taste and odor after chlorination take place	0.03	APHA55 20 C and IS 3025 (Part 39) *Infrared partition	-	0.01	0.03	NC	NC	-	-	-	-	Sticky layer	

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	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ⊕)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept -able	Cause of Rejection	3 ⊕	5 ♦	1993	2006					
17	Anionic detergents (as MBAS) mg/l, Max	0.2	Beyond this limit it can cause a light froth in water	1.0	Annex K IS 13428 ⊖ *Methylene Blue extraction	-	0.2	1.0	NC	NC	-	-	-	-	Foam formation	Soap manufacturing laundering	
18	Boron (as B) mg/l, Max	0.3	-	1.5	29 of 3025:1964 ⊖ *Potentiometric	-	-	-	1	5	0.3	0.5	1	-	Affect Central Nervous System 'Borism'	Irrigation Water, soap, glass industries or sewage or rock runoff	
19	Barium (as Ba) mg/l, Max	0.7	May lead to cardiovascular problem	No relaxation	Annex F IS 13428*/IS 15302 ⊕ *AAS * ICP		-	-	Newly added	0.3	0.7	NM	MCLG	MCL / TT	Increase in BP, hypertension	Discharge drilling, Metal refineries, Erosion	
														2			
20	Molybdenum (as Mo) mg/l, Max	0.07	Beyond this it may cause osteoporosis/ bone disorders	No relaxation	3025 (Part 2;2002) / ISO 11885:1996 ⊕ *ICP *AAS		-	-	Newly added	0.7	0.7	NM	-	Essential element	Wastewater, Drainage water, steel tungsten and pigment industry contamination		

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Sr (1)	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept-able	Cause of Rejection	3 ⊗	5 ♦	1993	2006				
21	Sulphide (as H ₂ S) mg/l, Max	0.05	Beyond this it may cause objectionable taste and odor	No relaxation	IS 325 (Part 29) *Methylene blue		-	-	Newly added	NG	NG	-	-	Odor nuisance, Toxic	Sewage, oxygen depletion leading to subsequent reduction of sulphate by bacterial activity	

Table 3 : Parameters Concerning Toxic Substances (Clause 4)

Sr (1)	BIS – 10500 (2004-2005)						CPHEEO (1998)		BIS-10500 (1991)		WHO Health based Guidelines		EU (1998) Para - metric Values	USEPA (June 2003)		Reasons for Inclusion Or Change	Sources of Contamination / Entry in Water Body
	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept -able	Cause of Rejection	3⊗	5♦	1993	2006		MCLG	MCL/TT		
1	Mercury (as Hg) mg/l, Max	0.001	Beyond this, the water becomes toxic	No relaxation	3025 (Part 48) *Mercury analyzer *AAS *Dith-izone	To be tested when pollution is suspected	0.001	0.001	NC	NC	0.001	0.006	0.001	MCLG	MCL/TT	Kidney Damage, Minamata disease	Erosion, discharge from refineries, factories, landfill runoff
													0.002	0.002			
2	Cadmium (as Cd) mg/l, Max	0.003	Beyond this the water becomes toxic	No relaxation	3025 (Part 41) *ICP *Dith-izone	To be tested when pollution is suspected	0.01	0.01	0.01	NC	0.003	0.003	0.005	0.005	0.005	Kidney damage	Erosion, corrosion, discharge from metal, steel and plastic industries, refineries
3	Arsenic (as As) mg/l, Max	0.01	Beyond this the water becomes toxic	No relaxation	3025 (Part 37)/ ⊕ * ICP *Silver-di - carbothio mate	To be tested when pollution is suspected	0.01	0.05	0.05	NR	0.01	0.01	0.01	0	0.010 as of 01/25/06	Risk of Cancer, Skin damage	Erosion, electronic production waste runoff, alloy industry
4	Cyanide (as CN) mg/l, Max	0.05	Beyond this the water becomes toxic	No relaxation	3025 (Part 27) ⊕ *Cyanide-selective electrode *Colorimetric method	To be tested when pollution is suspected	0.05	0.05	NC	NC	0.07	0.07	0.05	0.2	0.2	Nerve damage, Thyroid problem, Fatal in high concentration	Discharge from steel, metal refineries, fertilizers
														Free Cyanide			

BIS – 10500 (2004-2005)							CPHEEO (1998)		BIS-10500 (1991)		WHO Health based Guidelines		EU (1998) Para - metric Values		USEPA (June 2003)		Reasons for Inclusion Or Change	Sources of Contamination / Entry in Water Body
Sr (1)	Substance Or Characteristics (2)	Requirement (Desirable limit) (3 ⊕)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept -able	Cause of Rejection	3⊕	5♦	1993	2006						
5	Lead (as Pb) mg/l, Max	0.01	Beyond this the water becomes toxic	No relaxation	3025 (Part 47) * ICP *Dithioz one	To be tested when pollution is suspected	0.05	0.05	0.05	NC	0.01	0.01	0.01	0	TT ⁸ action level= 0.015	Delay in physical and mental development , Bone damage	Corrosion, erosion, lead acid battery and alloy industry	
6	Chromium (as Cr ⁶⁺) mg/l, Max	0.05	May be carcinogenic above this limit	No relaxation	3025 (Part 52) * ICP *Colori- metric	To be tested when pollution is suspected	0.05	0.05	NC	NC	0.05	0.05	0.05	0.1	0.1	Allergic dermatitis, Carcinogenic	Discharge from steel, pulp mill, erosion	
														Total Cr				
7	Poly nuclear Aromatic Hydrocarbons (as PAH) mg/l, Max	0.0001	May be Carcinogenic	No relaxation	APHA 6440 *Liquid – Liquid Extraction chromatographic	To be tested when pollution is suspected	0.2	0.2	NM	NM	0.7	NM	0.0001	0	0.0002	Cancer, reproductive difficulty	Leaching from coal tar coated pipeline	

8. Pesticide (Refer Table 5)

9	Nickel (as Ni) mg/l, Max	0.02	Beyond this it may cause allergic reaction	No relaxation	3025 (Part 54) * ICP *AAS, *Dimethyl- glyoxine		-	-	Newly added	0.02	0.07	0.02	-			Get absorbs into intestine, allergic	Leaching from electroplating, steel nickel alloy industries
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	Substance Or Characteristics (2)	Requirement (Desire-able limit) (3 ⊕)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept -able	Cause of Rejection	3⊕	5♦	1993	2006		MCLG	MCL or TT		
10	Polychlorinated biphenyls (PCBs) mg/l, Max	0.0005	May be carcinogenic	No relaxation	ASTM 5175/ APHA 6630 *GC/MS *Liquid liquid extraction GC	-	-	-	Newly added	-	-	-	MCLG	MCL or TT	Cancer, immune deficiencies, nervous system difficulty	Landfill run off, waste chemical run off	
													0	0.0005			
11	Trihalomethane				*GC *GC/MS								MCLG	MCL or TT	Carcinogenic	Byproduct of chlorination of drinking water	
														0.1			
														0.08			
A	Bromoform mg/l, Max	0.1	May be carcinogenic above this limit	No relaxation	ASTM D 3973-85/ APHA	-	-	-	Newly added	-	-	-	-	0	Genotoxic	Byproduct of chlorination of drinking water	
B	Dibromo chloro methane mg/l, Max	0.1	May be carcinogenic above this limit	No relaxation	ASTM D 3973-85/ APHA	-	-	-	Newly added	-	-	-	-	0	Genotoxic	Byproduct of chlorination of drinking water	
C	Bromo dichloromethane mg/l, Max	0.06	May be carcinogenic above this limit	No relaxation	ASTM D 3973-85/ APHA	-	-	-	Newly added	-	-	-	-	0.06	Carcinogenic	Byproduct of chlorination of drinking water	
D	Chloroform mg/l Max	0.2	May be carcinogenic above this limit	No relaxation	ASTM D 3973-85/ APHA	-	-	-	Newly added	-	-	-	-	No MCLG	Liver damage	Byproduct of chlorination of drinking water	

Table 4: Parameters Concerning Radioactive Substances (Clause 4)

Sr (1)	BIS – 10500 (2004-2005)						CPHEEO (1998)		BIS-10500 (1991)		WHO Health based Guidelines		EU (1998) Para - metric Values	USEPA (June 2003)	Reasons for Inclusion Or Change	Sources of Contami- nation / Entry in Water Body
	Sub- stance Or Charac- teristics (2)	Require- -ment (Desire- able limit) (3 ⊗)	Undesirable effect outside desirable limit (4)	Permissible limit in absence of alternate source (5 ♦)	Method of test (Ref to IS) (6)	Remarks (7)	Accept- -able	Cause of Reject- ion	3⊗	5♦	1993	2006				
1 : Radioactive materials																
a	Alpha emitters Bq/l, Max	0.1	May be carcinogenic above this limit	1.0	IS 14194 (Par2) *Counting	-	0.1	0.1	NM	0.1	-	-	MCLG	MCL or TT	Cancer	Erosion of radioactive mineral decay
													0	15pci/l		
b	Beta emitters Bq/l, Max	1.0	-	1.0	IS14194 (Pt 1) *Counting	-	1.0	1.0	NM	1.0	-	-	0	4 milli rans/yr	Cancer	Erosion of radioactive mineral decay

Table 5: Pesticide Residues Limits and Test Method

Sr. no	BIS – 10500 (2004-2005)			BIS-10500 (1991)	CPHEEO (1998)	WHO Health based Guidelines		EU (1998) Parametric values	USEPA (June 2003)		Reasons for Inclusion Or Change	Sources Of Contamination / Entry in Water Body
	Pesticides	Limit µg/l	Test method USEPA AOAC/ISO			1993 (µg/l)	2006 (µg/l)					
1	DDT (o,p and p, p-Isomers of DDT, DDE and DDD)	1	508 AOAC 990.06	N W E L Y A D D E D	-	2	1	-	-	-	Cell necrosis or mitogenic effect	Insecticide runoff
2	Gamma-HCH (Lindane)	2	508 AOAC 990.06		-	2	2	-	0.0002	0.0002	Kidney liver problem	Insecticide runoff
3	2,4D	3	515.1		-	30	30	-	0.07	0.07	Kidney liver problem	Herbicide runoff
4	Isoproturon	9	532		-	-	-	-	-	-	-	-
5	Alachor	20	525.2, 507		-	201	20	-	0	0.002	Cancer, Anemia	Herbicide runoff
6	Atrazine	2	525.2, 8141A		-	2	2	-	0.003	0.003	Cardiovascular and reproductive problems	Herbicide runoff
7	Aldrin/ Dieldrin	0.03	508		-	0.03	0.03	-	-	-	-	-
8	Alpha HCH	0.01	508		-	-	-	-	-	-	-	-
9	Beta HCH	0.04	508		-	-	-	-	-	-	-	-
10	Delta HCH	0.04	508		-	-	-	-	-	-	-	-
11	Endosulfan (Alpha, beta and sulphate)	0.41	508 AOAC 990.06		-	-	-	-	-	-	3	-
12	Monocrotophos	1	8141A		-	-	-	-	-	-	-	-
13	Ethion	3	1657 A		-	-	-	-	-	-	-	-
14	Chloropyriphos	30	525.2, 8141 A		-	-	-	-	-	-	-	-
15	Phorate	2	8141 a		-	-	-	-	-	-	-	-
16	Butachor	125	525.2, 8141A		-	-	-	-	-	-	3	-
17	Methylparathion	0.3	8141A ISO 10695		-	-	-	-	-	-	-	-
18	Malathion	190	8141A		-	-	-	-	-	-	-	-

References:

- **DOC 1: Revised BIS 10500: 2004-05**
- DOC 2: BIS 10500:1991
- DOC 3: WHO Drinking water standard, 1993
(www.lenntech.com/who's-drinking-water-standards.htm)
- DOC 4: WHO Drinking water standard, 2006
(www.lenntech.com/who's-drinking-water-standards06.htm)
- DOC 5: EU Drinking water standard, 1998
(www.lenntech.com/EU's-drinking-water-standards.htm)
- DOC 6: USEPA Drinking water standard, June 2003
(www.epa.gov/safewater/contaminants/index.html)
- DOC 7: Guidelines for Drinking Water Quality, 3rd Edition, Volume 1 Recommendations, WHO, Geneva, 2004.
- CPHEEO
- APHA (American Public Health Association), 17th edition
- Guidance manual for Drinking water quality monitoring and assessment, 1st edition

Key:

NG: No Guideline,	NM: Not Mentioned
NR: No Relaxation	NC: No Change
NA: Not Applicable	TT: Treatment Technique
MCL: Maximum Contaminant Level	MCLG: Maximum Contaminant Level Goal

Short form of Method:

AAS: Atomic Absorption Spectrophotometer

DPD: Diethyl-p-phenylene-diamine

PDA: Phenoldisulfonic Acid

ICP: Inductive Couple Plasma

GC/MS: Gas Chromatography and Mass Spectrophotometer

Symbol:

- ⊖ BIS method No. not mentioned in Guidance book
- ⊕ Not included in Guidance book
- ⊞ Not of health concern at concentration normally observed in drinking water and taste and appearance of water affected below the health based value.
- ∂ Owing to limitation in the animal data as model for human and the uncertainty surrounding the human data, a health based guideline optimization of the coagulation process in the drinking water plants using aluminium based coagulants are derived: 0.1 mg/l or less in large water treatment facilities and 0.2 mg/l or less in small facilities.
- ⊳ Occurs in drinking water at concentration well below at which toxic effect may occur.
- ® Changes in Revised BIS 10500 2004-2005
- ◆ Changes in Revised BIS 10500 2004-2005

Notes:

- Should include ammonium (NH₃) standard as large amount of sewage is getting into raw water sources and no simple method of removal of ammonia is available.
- In addition, instead of indicating BIS number of test method, indicate the method like AAS, colorimeter, GC etc.

Parameters newly added in BIS 10500:2004 are:

- Magnesium
- Barium
- Molybdenum
- Sulphide
- Nickel
- Polychlorinated biphenyls
- Trihalomethane
- Pesticide residues

Parameter	BIS 10500:1991	BIS10500:2004	WHO		EU 1998	USEPA June 2003		Reason for change or inclusion	Source of contamination
			1993 (mg/l)	2006 (mg/l)		MRDLG (mg/l)	MRDL (mg/l)		
Ammonia (NH ₃)	-	-	NG	NG	As NH ₄ 0.5 mg/l	-	-	Toxicological effect about 200 mg per kg of body weight ☞	Metabolic, agriculture, industrial processes, from disinfection with chloramine
Chloramines (as Cl ₂)	-	-	3	NM	-	4.0	4.0	Eyes nose irritation, anemia, stomach discomfort	Water additive used to control microbe

MRDLG: maximum residual disinfectant level goal.

MRDL: maximum residual disinfectant level.