

# INDIAN STANDARDS FOR SAFE DRINKING WATER

The Bureau of Indian Standards (BIS) has specified drinking water quality standards in India to provide safe drinking water to the people. It is necessary that drinking water sources should be tested regularly to know whether water is meeting the prescribed standards for drinking or not and, if not, then, the extent of contamination/ unacceptability and the follow-up required.

Apart from BIS specification for drinking water, there is one more guideline for water quality, brought out by Ministry of Water Resources, Government of India in 2005. This is known as Uniform Protocol for Water Quality Monitoring. A need has arisen to have a separate uniform protocol for Drinking Water Quality Monitoring in view of increasing risk of geogenic and anthropogenic contamination.

Keeping in view requirement of preparing Uniform Drinking Water Quality Monitoring Protocol, the Ministry of Drinking Water and Sanitation (MDWS), Government of India constituted an Expert Group which prepared the Protocol. The Drinking Water Quality Monitoring protocol describes specific requirements for monitoring drinking water quality with a view to ensure provision of safe drinking water to the consumers.

## **Definition of drinking water quality**

BIS has set specifications in IS-10500 and subsequently the revised edition of IS 10500: 2012 in Uniform Drinking Water Quality Monitoring protocol.

Some parameters apart from those mentioned in IS 10500: 2012 may also be measured if the States deem it necessary. This standard has two limits i.e. Acceptable limits and permissible limit in absence of alternate source. If any parameter exceeds the limit, that water is considered unfit for human consumption.

Broadly speaking water is defined as unfit for drinking as per Bureau of Indian Standards, IS-10500-2012, if it is bacteriologically contaminated (presence of indicator Uniform Drinking Water Quality Monitoring Protocol bacteria particularly E-coli, viruses etc.) or if chemical contamination exceeds maximum permissible limits (e.g. excess fluoride [ $>1.5\text{mg/l}$ ], Total Dissolved Solids (TDS) [ $>2,000\text{mg/l}$ ], iron [ $>0.3\text{ mg/l}$ ], manganese [ $>0.3\text{ mg/l}$ ], arsenic [ $>0.05\text{mg/l}$ ], nitrates [ $>45\text{mg/l}$ ] etc.).

The latest drinking water specification and test protocol are -

<b>IS: 10500-2012</b>				
<b>Drinking Water Specification</b>				
<b>(Second Revision)</b>				
<b>Sl. No.</b>	<b>Test Parameter</b>	<b>Requirement (Acceptable limit)</b>		<b>Method of Test</b>
		<b>Requirement (Acceptable limit)</b>	<b>Permissible limit In the Absence of alternate source</b>	<b>(Indian Standard IS:3025 Methods of Sampling and Test for Water and Waste Water)</b>
1.	Odour	Agreeable	Agreeable	IS:3025 Part 5
2.	Taste	Agreeable	Agreeable	IS:3025 Part 8
3.	pH value	6.5 – 8.5	No relaxation	IS:3025 Part 11
4.	Turbidity, NTU, Max	1	5	IS:3025 Part 10
5.	Total dissolved solids (TDS), mg/l, Max	500	2000	IS:3025 Part 16
6.	Total alkalinity as CaCO <sub>3</sub> , mg/l, Max	200	600	IS:3025 Part 23
7.	Total hardness as CaCO <sub>3</sub> , mg/l, Max	200	600	IS:3025 Part 21
8.	Calcium as Ca, mg/l, max	75	200	IS:3025 Part 40
9.	Magnesium as Mg, mg/l, Max	30	100	IS:3025 Part 46
10.	Chloride as Cl, mg/l, Max	250	1000	IS:3025 Part 32
11.	Residual Free Chlorine, mg/l, Min*	0.2	1	IS:3025 Part 26
12.	Sulphate as SO <sub>4</sub> , mg/l,	200	400	IS:3025 Part 24

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	max			
13.	Nitrate Nitrogen as NO <sub>3</sub> , mg/l, Max	45	No relaxation	IS:3025 Part 34
14.	Fluoride as F, mg/l, Max	1.0	1.5	IS:3025 Part 60
15.	Total Iron as Fe, mg/l, Max	0.3	No relaxation	IS:3025 Part 53
16.	Coliform MPN/100 ml	Shall not be detectable in any 100 ml sample		Indian Standard IS:1622, Methods of Sampling and Microbiological Examination of water.
17.	Faecal Coliform, Presence/Absence	Shall not be detectable in any 100 ml sample		
18.	E.coli, Presence / Absence	Shall not be detectable in any 100 ml sample		

\*Applicable only when water is chlorinated