



Rural Drinking Water & Sanitation Department
Rural Development & Panchayat Raj Department



Concept of Water Quality Monitoring & Surveillance (WQMS)



- ❖ **Monitoring:** Laboratory and Field Testing of water samples collected from drinking water supply sources and FHTCs.
- ❖ **Surveillance:** Regular observation of the safety and acceptability of drinking water supply.



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Objectives of WQMS:



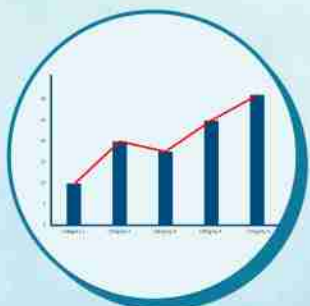
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Monitoring and Verifying safety of drinking water from the sources to the final delivery



Validating process and preventive measures of water quality



To evaluate water quality trend over a period of time



To assess the type of water purification technology required.



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How is WQMS Done?



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- ❖ Presumptive Water Quality testing at Gram Panchayat level using Field Test Kits (FTKs) and Bacteriological Vials
- ❖ Surveillance of the drinking water sources by the rural community.



- ❖ Well-equipped laboratories with Quality Managers, Analyst, Sample Cell In-charge, and Water Sample Collectors
- ❖ Monitoring is done by Quality managers & Executive Engineers at district level headed by CEOs of respective districts & WQMS team at State Office headed by the Commissioner & CE through regular reviews, VCs, field visits, audits.



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Presumptive Testing at Gram Panchayat



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- ❖ It is a screening and qualitative test to check water for the chemical and microbiological contamination
- ❖ Field Test Kit (FTK) is used for testing basic chemical parameters like pH, Chloride, Total Hardness, Iron, Nitrate, Fluoride & Total Dissolved Solids
- ❖ H₂S vials are used for presumptive testing of microbiological parameters
- ❖ Gram Panchayat identifies and trains 5 women from local community (ASHA & Anganwadi workers, NGO workers & Teachers) to conduct sanitary survey and presumptive water quality tests using **FTKs / Bacteriological Vials**.



Field Test Kits



H₂S vials



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Sources of Drinking Water Tested:



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Dug Well



Bore Well



Lake, Stream, River, Kalyani



Water Purification Plant



Functional Household
Tap Connection



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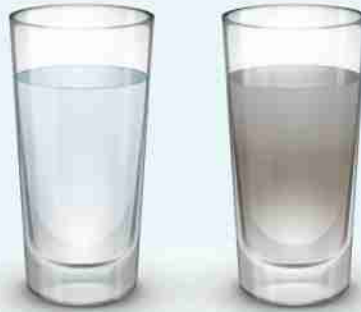
Drinking Water should be free from:



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Disease Causing
Organisms



Turbidity & Color



Unpleasant
Taste & Smell



Corrosion Causing
Chemicals



Pollutants



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Health Impacts of Non-Potable Water Consumption - 1



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Health effects due to consumption of water in which concentration of certain parameters exceeds permissible limits:

Fluoride



Dental Fluorosis

Chronic Skeletal Fluorosis,
Impairment of Muscles & Pain



Nitrate



Methemoglobinemia
(Blue Baby Syndrome)

Cancer in Adults



Arsenic



Vomiting, Abdominal Pain,
Diarrhoea

Hyperkeratosis, Skin Cancer



Sulphate



Diarrhoea (Laxative Effect)

Dehydration



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Health Impacts of Non-Potable Water Consumption - 2



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Health effects due to consumption of water in which concentration of certain parameters exceeds permissible limits:

Coliform Organism

Fever, Abdominal Cramps

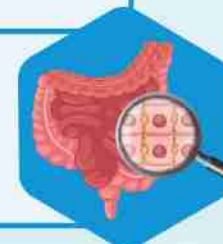
Gastro-intestinal Upset,
Diarrhoea



Alkalinity (pH)

Eyes, Skin, &
Mucous Membranes Irritation

Gastro-intestinal Irritation



Iron

Hemochromatosis



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Water Quality Parameters and Hazards



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Bureau of Indian Standards (BIS) has laid down the **Acceptable and Permissible** limits of various water quality parameters for potable drinking water (**IS -10500: 2012, Ra: 2018**) which are given below:

Parameters	Acceptable Limit	Permissible Limit
Turbidity NTU	1	5
Total Dissolved Solids (mg/l)	500	2000
pH Value	6.5 - 8.5	No relaxation
Alkalinity (as CaCO ₃ , mg/l)	200	600
Total Hardness (as CaCO ₃ , mg/l)	200	600
Chloride (mg/l)	250	1000
Calcium (mg/l)	75	200
Magnesium (mg/l)	30	100
Fluoride (mg/l)	1	1.5
Sulphate (mg/l)	200	400
Nitrate (mg/l)	45	No relaxation
Iron (mg/l)	1	No relaxation
Arsenic (mg/l)	0.01	No relaxation
Total Coliform	Shall not be detected in any 100 ml of sample	
<i>E.coli</i>	Shall not be detected in any 100 ml of sample	



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Recommended Water Testing - 1



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Conditions Identified

Recommended Test

Recurrent
Gastro-Intestinal Illness



Coliform Bacteria

Hard Water, Scaly Residues,
Soaps Don't Lather, Water Treatment
Equipment Wear & Tear



pH, Total Hardness,
Calcium, Magnesium

Stained Plumbing
Fixtures, Laundry



Iron, Copper, Manganese

Water Appears Cloudy,
Frothy or Colored



Color, Turbidity



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Recommended Water Testing - 2



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Conditions Identified

- ♦ Pungent/Rotten Egg Smell
 - ♦ Metallic Taste
 - ♦ Salty Taste



Recommended Test

- ♦ Nitrate, Nitrogen, Hydrogen Sulfide
- ♦ Iron, Magnesium
- ♦ Chloride, Sodium

Areas of Intensive Agriculture
near Water Sources



Nitrate, Pesticides,
Coliform Bacteria

Gas Drilling Operation
nearby



Chloride, Sodium, Barium
Strontium

Dental Problem



Fluoride



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WQMS Laboratories in Karnataka - 1



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Multi Level Drinking Water
Quality Testing in Karnataka



State Level

* Government/Private
Referral Labs

District/Divisional Level

* 31 Labs

Sub-divisional Level

* 46 Labs

Gram Panchayat Level

*Field Test Kits
*Bacteriological Vials

- ❖ Well-equipped laboratory network are the backbone of WQMS activities
- ❖ Pre & Post Monsoon water quality tests are conducted
- ❖ Water Quality results are updated in WQMIS.



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WQMS Laboratories in Karnataka - 2

- ❖ State has set-up 31 District/Divisional Labs and 46 Sub-divisional Labs across Karnataka
- ❖ About 1,20,000 water samples are tested every year.

 District/Divisional Lab
 Sub-divisional Lab



Har Ghar Jal
Jal Jeevan Mission



JALOTSAVA
MANE MANEKE GANGE



SWACHHA SANKEERNA



9480985555

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Journey towards NABL Accreditation - 1



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- ❖ National Accreditation Board for Testing and Calibration Laboratories (NABL) provides accreditation to Conformity Assessment Bodies (Laboratories)
- ❖ Upgradation of Laboratory infrastructure is being taken up
- ❖ Competent lab personnel are being recruited
- ❖ Availability of basic requirements such as instruments, chemicals, glasswares and certified reference materials are being ensured
- ❖ Level-4 documentation is being maintained
- ❖ Capacity Building:
 - ♦ Orientation on WQMS to Executive Engineers and Lab in-charges
 - ♦ Quality Managers are trained on ISO 17025:2017
 - ♦ Induction and On-job training to Lab personnel



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Journey towards NABL Accreditation - 2



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Status of NABL Accreditation (as on 16th July, 2021):

- ❖ **Dakshina Kannada** Lab is successfully NABL accredited
- ❖ Bengaluru Urban, Bengaluru Rural and Chikkaballapur laboratories have successfully completed NABL audit and have been recommended for NABL accreditation
- ❖ NABL accreditation application for 8 laboratories has been filed.



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Water Quality Testing for Public



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A fee of Rs.1150/- is charged to test the water quality for parameters:

pH, Taste, Colour, Odour, Turbidity, TDS, Nitrate, Fluoride, Chloride, Alkalinity, Calcium, Total Hardness, Iron, Sulphate, Arsenic, Total Coliform and *E.coli*.



**₹1150/-
Only**



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Procedure to Get Your Water Sample Tested - 1



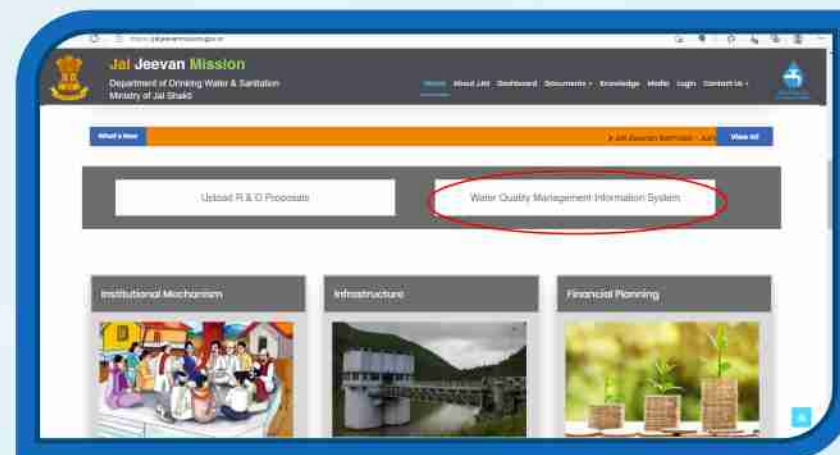
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1

Account Registration



Visit Jal Jeevan Mission Portal
<https://jaljeevanmission.gov.in/>



Click on 'Water Quality Management Information System'



Create a **Public User** Account and Login



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Procedure to Get Your Water Sample Tested - 2



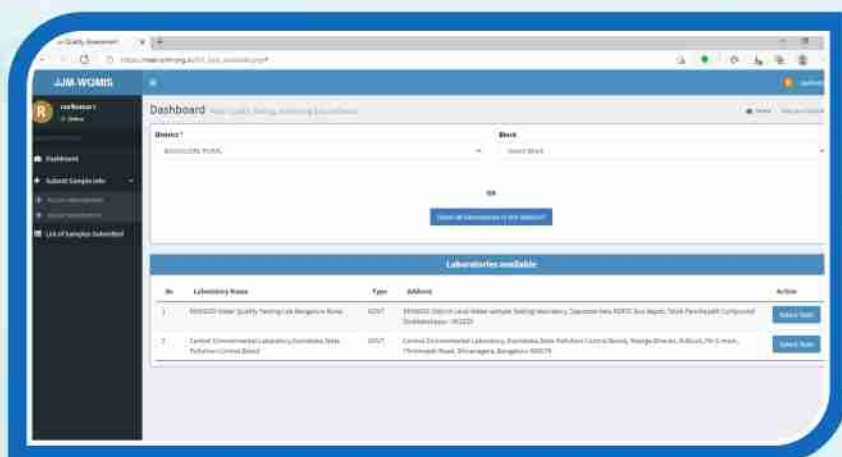
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2

Sample Submission

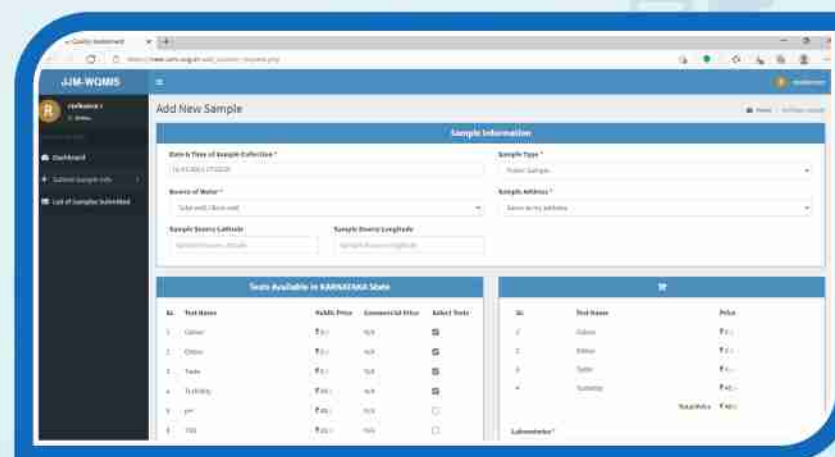
Navigation method shows two methods to submit:

a. As per Laboratories:



- ❖ Here, preferred lab can be selected using district and block filters
- ❖ Select the suitable lab & required tests, and proceed for sample submission.

b. As per Parameters



- ❖ Here, tests are selected first and then the labs which performs the selected tests are displayed
- ❖ Select your preferred tests & lab, and proceed for sample submission.

On successful submission along with payment, you will receive a message with sample ID and QR code. This has to be provided to lab technician along with the sample.



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Procedure to Get Your Water Sample Tested - 3



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3

Status & Reports

List Of Samples Submitted

Samples Information

Show 10 entries

Sr.	Sample ID	Name of the laboratory	Date & time of sample submitted to laboratory	Test Result	QR Code
1	UT10L36752	Testing water (demo entry) laboratory	2020-12-15 09:25:09		
2	UT10L36753	Testing water (demo entry) laboratory	2020-12-18 05:25:22	Pending	
3	UT10L36754	Testing water (demo entry) laboratory	2020-12-02 23:25:02		
4	UT10L36755	Testing water (demo entry) laboratory	2020-12-02 16:10:50	Pending	
5	UT10L36756	Testing water (demo entry) laboratory	2020-12-02 16:10:50		

- ❖ List of the samples submitted are displayed in the dashboard along with the status
- ❖ Once tests are done, reports can be downloaded.



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IEC Activities and Community Surveillance

- ❖ 33 ISAs are empanelled across the State for conducting IEC & HRD training activities
- ❖ ISAs along with the community conduct water quality awareness and training programs on importance of drinking water quality, its impact on health and presumptive testing at Gram Panchayat level
- ❖ Community Radio Services, Wall Art, Posters, Hoardings, Audio-Visual, Participatory Rural Appraisal, Social Media & other tools are used to create awareness.



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