

WATER ANALYSIS



INTRODUCTION:

Water, regardless of whether it is intended for business purposes, agriculture, homegrown purposes, or is utilized by municipalities and private mortgage holders, it should be tried consistently to keep the source of water safe and free from environmental risks and potential health disorders. Water testing is carried out to meet the regulatory requirements and adhere to the safety procedures that are needed for pollutant-free water. Water analysis is a broad concept, which involves several procedures to analyze and evaluate the quality of water.

Objectives of the Practice:

The initiative is going on practising with the following objectives

- a) To ensure the availability of safe drinking water for the students and staff of the college.
- b) To extend the facility for the benefits of general public in and around Tiruvalla, as part of the social responsibility initiatives of the college.

Context:

The state of Kerala is blessed with abundant water resources and studies indicate that rural drinking water was free from contamination when compared to urban. Bacteriological quality of the water sources were found to be severely above the accepted levels for drinking water and poses a major threat to human health. In the urban areas, the major problem associated with drinking water is mismanagement of solid and liquid wastes, which may contaminate the water bodies. Water analysis practice of the college thus aims at ensuring superior quality of the drinking water for economic, health and social well being of the people in and around the institution. The regular testing will help to maintain the water quality and the safe drinking water will eliminate the chances of potential health hazards related to water contamination.

The Practise:

Water samples are collected from the drinking water sources of the campus in regular intervals (15 days) in clean, sterile sampling bottles and labelled accordingly. The samples are then subjected to presumptive testing for coliform bacteria by the most probable number (MPN) method. Water samples from all the drinking sources are checked twice a month and any variation (if any) in the water quality is dealt with by periodic chlorination of water sources. Water analysis is performed by students of the school of Biosciences under the mentoring of two faculties and the results are reported to the HOD and Principal. The facility is also utilized by the faculty and public for testing the water samples from their corresponding places.

The Procedure:



pH, hardness and bacteriological analysis (MPN) for total coli forms were performed. pH was determined by automated pH meter available in the School of Bioscience Laboratory. The hardness of water is evaluated by total hardness estimation method using buffer solution, indicator solution and standard EDTA with the below formula;

$$\text{Total hardness} = \frac{\text{ml of EDTA}}{\text{volume of sample}} \times 100\text{ppm}$$

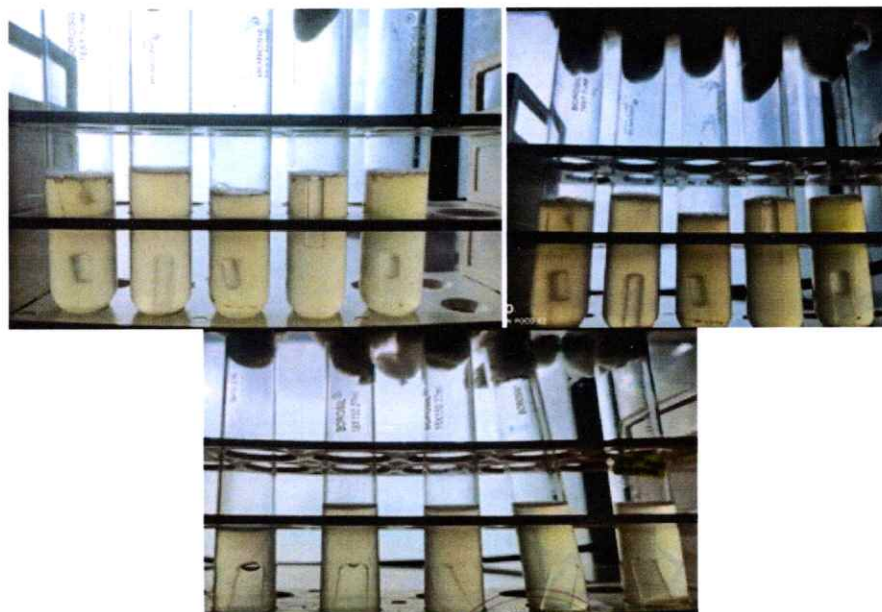
Bacterial examination of water is performed by multiple tube fermentation method using double strength lactose broth, single strength lactose broth and Duraham's tube.

Evidence of success:

The School of Biosciences was able to pinpoint the presence of bacteriological contamination in drinking resources and were able to take the necessary initiatives to eliminate the contamination through proper sanitization and disinfection measures. Periodic checking of the bacteriological quality of water has resulted in a general awareness regarding the importance of safety measures to the students and has made them personally responsible and socially committed. The water sample was also examined for the public and advised with proper methods and sanitary protocols to be followed to eliminate the contamination for maintaining the water quality.

Problems encountered and resources required:

Resources required for the analysis include glass wares, chemicals and skilled persons. The institutional management was managed to supply all the necessary glass wares and adequate chemicals required to run the programme in a successful manner. The requirement of skilled persons to conduct the analysis was met by the students and is monitored by competent faculties.



Water Analysis by MPN Method using Lactose Fermentation Broth



REGISTER FOR.

WATER QUALITY ANALYSIS.

AT

MACFAST Campus.

from April 2018.



Water Analysis Protocols & Parameters

I Sampling Points

Kitchen tap - A

Open stage cooler - B

Office cooler - C

101 cooler - D

202 cooler - E

Exam cooler - F

Biocampus - G

II Sampling Frequency

Water samples collected once every 15 days.
Results reported to HOD and Principal.

III Water Quality Parameters

① pH

② Hardness.

③ Bacteriological Analysis

- MPN test for total coliforms.



Reagents

Procedure for Total hardness.

Reagents

- ① Buffer solution:
Add 67.5g NH_4Cl to 510ml of Ammonia solution and dilute to 950 ml. with water. Dissolve 616mg of MgO and 920mg of disodium EDTA in 50ml distilled water and add the mix to the above.
- ② Indicator solution:
Dissolve 0.5g of solochrome black T and 4.5g of hydroxyl amino hydrochloride in 100ml alcohol.
- ③ Standard 0.01N EDTA.
Dissolve 3.72g of crystalline disod. EDTA in 1l water.

Procedure

Place 100ml of water sample in conical flask and add 2ml of buffer solution and 6 drops of indicator. The sample is titrated against EDTA solution.

$$\text{Total Hardness} = \frac{\text{ml of EDTA}}{\text{volume of sample}} \times 1000 \text{ ppm}$$

Bacterial Examination of Water by Multiple tube fermentation

Reagents & Glassware

- ① Double strength lactose broth
- ② Single strength lactose broth
- ③ Durham's tube.
- ④ Sterile pipette.
- ⑤ Spirit lamp.

Procedure

- Required water samples collected in sterile conical flasks. 10ml of ~~single~~^{double} strength lactose broth and double strength lactose added to tubes. In 3 tubes, 9ml of DSLB added and 1ml of water sample also added. In 3 tubes, 9.9ml SSLB added with water sample added as 0.1ml. In 3 tubes, 9.99ml of SSLB added with 0.01ml of water sample. Inverted Durham's tube was inserted in all the tubes to observe for gas production. All the tubes were incubated for 24 hrs at 37°C and later observed for turbidity & gas production.



Result

Results

Normal pH - 6.5 to 8.5

Normal total hardness -

soft 0 - 17.1 ppm.

slightly hard 17.1 - 60 ppm.

moderately hard 60 - 120 ppm.

hard - 120 - 180 ppm.

very hard - ~~180~~ > 180 ppm.



Results of the analysis on 13/4/18.

① pH

Sample A	7.76	Sample E	7.14
Sample B	6.82	Sample F	5.83
Sample C	6.93	Sample G	6.85
Sample D	6.83		

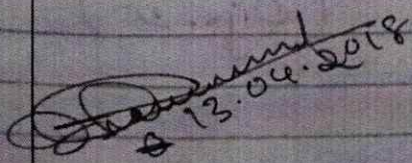
② Total Hardness.

Sample A	55 ppm.	slightly hard
Sample B	70 ppm	mod. hard.
Sample C.	60 ppm	slightly hard.
Sample D	45 ppm	slightly hard.
Sample E	50 ppm	slightly hard.
Sample F	46 ppm	slightly hard.
Sample G.	75 ppm.	moderately hard.

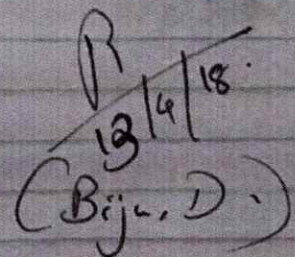
③ MPN or Total Coliform.

Sample A	3-3-2	400 MPN/ml.	unsatisfactory
Sample B	3-1-2	120 MPN/ml.	unsatisfactory
Sample C.	0-0-0	<3	highly satisfactory
Sample D	2-2-0	21	suspicious.
Sample E	0-0-0	<3	highly satisfactory
Sample F	0-1-0	3	satisfactory
Sample G	3-0-0	23	suspicious.
Sample H.			

Analysis conducted by Dr. Jenny


13.04.2018




13/4/18.
(Biju D.)

8
Results of analysis on 20/4/18.

① pH

Sample A 7.16 normal
Sample B. 6.91 normal
Sample C 6.74 normal
Sample D 6.52 normal.

ladies hostel cooler
A - Kitchen Tap water
B - Open stage cooler
C - 102 Kest (MCA)
D - Biocampus.

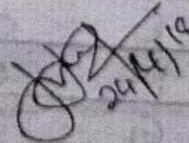
② Hardness

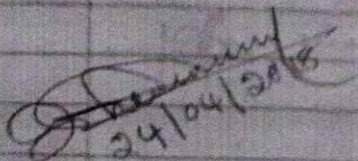
Sample A - 50 ppm slightly hard.
Sample B. - 75 ppm moderately hard.
Sample C - 40 ppm slightly hard.
Sample D. - 24 ppm slightly hard.

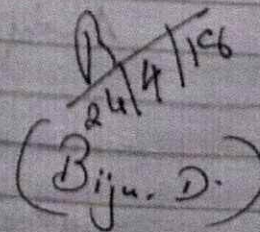
③ Bacterials.

Sample A - 21 suspicious.
Sample B. - 43 unsatisfactory
Sample C - 7.4 suspicious
Sample D - 9.2 suspicious.

Analyzed by Dr. Jenny.


24/4/18


24/04/2018


24/4/18
(Biju. D.)



Results of analysis on 26/4/18

Sampler - Boys
hostel kitchen
tap water

① pH
6.7 normal.

② Hardness.
46 ppm slightly hard.

③ Bacteria contamination.
3-2-1 - 150 MPN/l unsatisfactory

Analyzed by Dr. Jenny

[Signature]
27/4/18

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27/4/18
(Bijoy D.)



Results of Analysis on 16/5/18Bacteriological analysisSamples

- A - Exam Hall
- B - 302
- C - 202
- D - 102
- E - Cooler near Mess.

Results

		MPN	
A	2-0-1	14	suspicious
B	3-2-1	150	unsatisfactory
C	2-2-1	28	suspicious
D	2-2-2	35	suspicious
E	2-2-0	21	suspicious.

[Signature]
16/5/18

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16/5/18



Results of Analysis on 18/5/18

Bacteriological Analysis

Samples

- F - Office.
- G - Biocampus
- H - Ladies hostel
- I - Boys hostel

Results

F - 2-1-0 \neq 15 Suspicious

G - 2-1-0 15 Suspicious

H - 1-1-1 11 Suspicious

I - 3-3-1 460 satisfactory

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19/5/18

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30/5/18

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30/5/18



Action Taken - Report

Results indicate that some of the drinking water outlets showed positive for the presence of fecal coliforms. As a result a number of stringent measures were taken to ensure safe drinking water.

- ① Maintenance of a chart indicating the cleaning of the water purifiers periodically which would be monitored every month.
- ② The original water body was cleaned and the main water reservoirs were subjected to chlorination periodically.
- ③ The outlets which showed higher content of fecal coliforms were identified and new water purifiers were installed. The water from the purifier would come into a secondary outlet.

These actions have led to the assumption that the water quality would be improved as can be evidenced by further testing.



Results of Analysis on 5/6/2018

Samples.

- A - Open stage cooler.
- B - Girls Hostel
- C - Office.
- D - Library.
- E - Bioscience

Bacteriological Analysis.

A	1-0-0	3.6	satisfactory
B	0-1-1	6.1	suspicious.
C	1-0-0	3.6	satisfactory
D	1-1-0	7.4	suspicious.
E	2-2-1	28	suspicious.

Results of Analysis on 12/6/2018.

Samples.

- A - 402 (not working)
- B - 302
- C - 202
- D - 102
- E - Boys hostel

Bacteriological analysis.

A			
B	2-1-2	27	suspicious
C	1-1-1	11	suspicious.
D	2-0-2	20	suspicious.
E	0-3-0	9.4	suspicious.

Jenny Jacob
18/06/2018

Analysis by
Dr. Jenny Jacob
Dr. Sri Devi V

Jenny Jacob

Verified by

Dr. Sri Devi V
18/6/18



Results of Analysis, on 23/7/18

Samples Labelling

- ① Office - A
- ② Ladies hostel - B
- ③ Cooler - C
- ④ First floor (102) - D
- ⑤ Second Floor (202) - E
- ⑥ Third floor (302) - F
- ⑦ Fourth floor (402) - G
- ⑧ Biocampus - H
- ⑨ Library - I
- ⑩ Boys hostel - J

Results

Sample	pH	Hardness (ppm)	Inference
A	6.82	52	Slightly hard
B	6.61	59	"
C	6.67	62	"
D	6.85	50	"
E	6.85	52	Slightly hard
F	6.72	40	"
G	6.61	46	"
H	6.67	54	"
I	6.82	146	Hard water
J	6.81	46	Slightly hard

contd...

Bacteriological Analysis - Results

Sample	Result	MPN Count	Inference
A	0-0-0	< 3	Highly satisfactory
B	1-0-0	3.6	Satisfactory
C	1-2-0	11	Suspicious
D	1-0-0	3.6	Satisfactory
E	3-3-0	240	Unsatisfactory
F	2-0-1	14	Suspicious
G	0-0-0	< 3	Highly satisfactory
H	0-0-0	< 3	Highly satisfactory
I	0-0-0	< 3	Highly satisfactory
J	3-3-1	460	Unsatisfactory

Analysis conducted by Dr. Jenny Jacob
 Dr. Seidevi V.

Verified by Mr. Biju Dhamapalan, HOD.

Signature: *[Signature]*
 Date: 26/02/2018



Results of analysis on 4th September, 2018

Sample Points

Normal limit

≤ 3 MPN

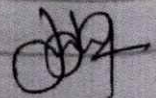
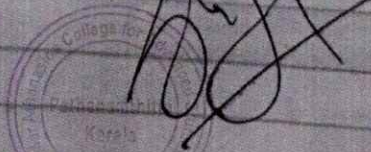
- A - Office Kest purifier.
 B - Ladies hostel Kest purifier.
 C - Cooler outside Students mess.
 D - Boys Hostel
 E - 102
 F - 202
 G - 302
 H - 402.
 I - Library
 J - Biocampus

After
of food
in Biocampus

Sample	Result	MPN Count	Inference
A	2-1-1	20	suspicious
B	1-1-0	7.4	suspicious
C	3-3-3	>1100	unsatisfactory ✓
D	3-3-3	>1100	unsatisfactory ✓✓
E	3-2-2	210	unsatisfactory ✓
F	3-3-3	>1100	unsatisfactory ✓
G	3-2-3	290	unsatisfactory ✓
H	3-3-3	>1100	unsatisfactory ✓
I	2-0-0	9.2	suspicious ✓
J	3-3-3	>1100	unsatisfactory ✓

Analysis conducted by Dr. Jenny Jacob

Verified by Stephen James

1.

Result of water analysis on 27th September, 2018.

Sample Points

After chlorination.

- A Office Kest
- B Coolers.
- C 102
- D 202
- E 302
- F 402
- G Library
- H Girls hostel
- I Boys hostel
- J Bio campus.
- K J

Sample	Result	MPN count	Inference
A	0-1-0	3	Satisfactory
B	1-1-1	11	satisfactory
C	1-2-0	11	satisfactory
D	1-3-0	16	satisfactory
E	2-2-0	21	suspicious.
F	3-2-2	210	unsatisfactory
G	3-3-0	240	unsatisfactory
H	2-2-0	21	suspicious.
I	3-2-2	210	unsatisfactory
J	3-2-2	210	unsatisfactory

Analysis by Dr. Jenny Jacob & Dr. Shilpa Lekshmi

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Verified by HOD

[Signature]
04/10/2018

Result of Analysis on 6th December, 2018

Sample Points

- A - Office
- B - Ladies hostel
- C - Cooler
- D - Boys hostel
- E - 102
- F - 202
- G - 302
- H - 402
- I - Library
- J - Biocampus

Sample	Result	MPN Count	Inference
A	3-0-1	38	suspicious
B	2-0-0	9.2	suspicious
C	0-1-1	6.1	satisfactory ✓
D	1-1-0	7.4	satisfactory ✓
E	2-0-0	9.2	suspicious
F	3-1-0	43	Suspicious
G	2-2-1	28	suspicious
H	2-0-0	9.2	suspicious
I	3-3-1	460	unsatisfactory ✗
J	3-2-1	150	unsatisfactory ✗

Analysis by

Dr. Shilpahekhini & Dr. Jenny Jacob

(Signature)

(Signature)

Countersigned by

HOD

(Signature)

(Signature)
Principal



Result of Analysis 11th February, 2019


Sample Points

- A - Exam Hall (402)
- B - 302 Kest
- C - 202 Kest
- D - 102 Kest
- E - Coolers
- F - Office Kest
- G - Biocampus.
- H - Ladies Hostel
- I - Boys Hostel
- J - Library.

Sample	Result	MPN count	Inference
A	0-0-0	<3	satisfactory
B	0-0-0	<3	satisfactory
C	0-1-0	3	Satisfactory
D	1-0-0	3.6	satisfactory
E	1-0-0	3.6	satisfactory
F	0-0-0	<3	satisfactory
G	1-0-0	3.6	satisfactory
H	1-0-0	3.6	satisfactory
I	1-1-0	7.4	suspicious
J	0-0-0	<3	satisfactory

Analysis by

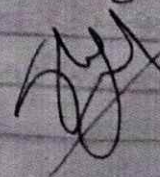
Dr. Jenny Jacob

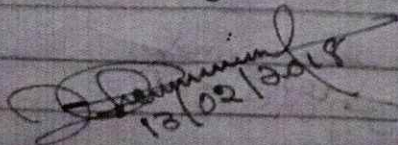

13/2/19

Dr. Sri Palakshmi


12/2/19

Counter signed by HOD




13/02/2019

Result of Analysis 14th March, 2019

Sample Points.

A	- 501	Library
B	- 502	302 Kent
C	- 503	202 Kent
D	- 504	102 Kent.
E	- 505	Cooler
F	- 506	Office Kent
G	- 507	Biocampus
H	- 508	Ladies Hostel
I	- 509	Boy's Hostel.
J	- 510	402 Exam Hall
K	-	405

Sample	Result	MPN count	Inference
A	2-0-0	9.2	Suspicious
B	1-1-0	7.4	Suspicious
C	1-1-0	7.4	Suspicious
D	2-1-0	43	Not satisfactory
E	1-1-0	7.4	Suspicious
F	2-0-0	9.2	Suspicious
G	3-3-1	460	Not satisfactory
H	1-1-0	7.4	Suspicious
I	0-0-0	<3	Satisfactory
J	2-2-1	28	Not Satisfactory
K	1-0-1	7.2	Suspicious

Analysis by

Dr. Shilpa Lekshmi

Shilpa
18/3/19

Dr. Jenny Jacob

Jenny
18/3/19

Counter signed by HOD

Jenny
18/3/19

Shilpa
19/03/2019

Results of Analysis on 28th March, 2019

Sample Points

A - Office

B - 102

C - 202

D - 302

E - 402

F - 405

G - Library

H - Girls hostel

I - Bio campus

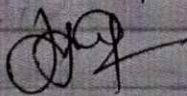
J - Boys hostel

K - Cooler.

Sample	Result	MPN Count	Inference
A	2-2-1	28	Not satisfactory
B	2-2-0	21	Not satisfactory
C	1-0-1	7.2	suspicious
D	1-0-1	7.2	suspicious
E	1-1-0	7.4	suspicious
F	2-2-1	28	Not satisfactory
G	0-1-1	6.1	suspicious
H	1-1-0	7.4	suspicious
I	1-2-0	11	suspicious
J	0-0-0	<3	satisfactory
K	0-1-0	3	satisfactory

Analysis by

Dr. Jenny Jacob

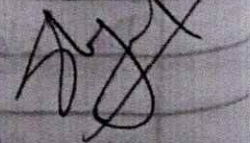
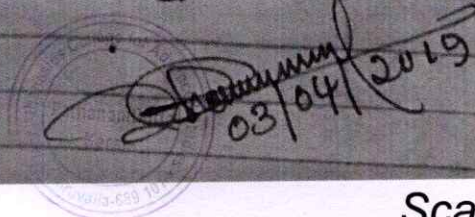


Dr. Shilpa Lekshmi



Counter signed by

HOD

03/04/2019


Results of Analysis on 25th June, 2019


Due to construction work in the Microbiology lab and biocampus the analysis work was stopped for April, May and half of June.

Sample Points

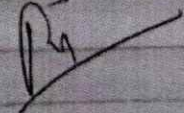
- A - - Cooler.
- B - - office.
- C - - Boys Hostel
- D - - Library
- E - - 102
- F - - 202
- G - - 302
- H - - 402
- I - - 405
- J - - Girl's Hostel
- K - - Biocampus.

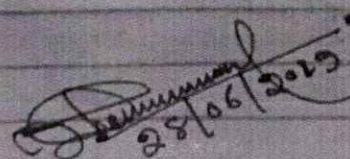
Sample	Result	MPN count	Inference
A	0-0-0	<3	Satisfactory
B	0-0-0	<3	Satisfactory
C	0-0-0	<30	Satisfactory
D	0-0-0	<3	Satisfactory
E	0-0-0	<3	Satisfactory
F	0-0-0	<3	Satisfactory
G	0-0-0	<3	Satisfactory
H	0-0-0	<3	Satisfactory
I	0-0-0	<3	Satisfactory
J	0-0-1	3	Satisfactory
K	0-0-0	<3	Satisfactory


Dr. Jenny Jacob


Dr. Shilpa Lekshmi

Countersigned by
HOD




25/06/2019



Results of analysis on 8th July 2019

Sample points

- A - Office
- B - cooler
- C - Library
- D - Girl's Hostel
- E - Biocampus ✓
- F - Boy's Hostel
- G - 102
- H - 202
- I - 302
- J - 402
- K - 405

Sample	Result	MPN count	Inference
A	0-1-0	3	Satisfactory
B	0-0-0	<3	Satisfactory
C	0-3-0	9.4	Suspicious
D	0-1-0	3	Satisfactory
E	1-2-1	15	Suspicious ✓
F	0-0-0	<3	Satisfactory
G	0-1-0	3	Satisfactory
H	0-0-0	<3	Satisfactory
I	0-2-0	6.2	Satisfactory
J	1-1-0	7.4	Suspicious
K	1-0-1	7.2	Suspicious

Analysis by

[Signature]
Dr. Jerry Jacob

[Signature]
Dr. Shilpa Lekshmi

Counter Signed by
[Signature]
HOD

[Signature]
10/07/2019

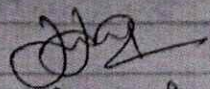
Results of analysis on 22nd July 2019.


Sample Points

- A - Biocampus
- B - Office.
- C - Library.
- D - Cooler.
- E - Girls hostel
- F - 102
- G - 202
- H - 302
- I - 402
- J - 405
- K - Boys hostel

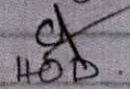
sample	Result	MPN count	Inference.
A	3-3-0	240	not satisfactory —
B	0-0-0	<3	satisfactory
C	0-0-1	3	satisfactory
D	1-1-0	7.4	suspicious.
E	0-0-0	<3	satisfactory
F	3-1-1	75	not satisfactory —
G	0-0-1	3	satisfactory
H	0-1-1	6.1	suspicious.
I	0-1-0	3	satisfactory
J	3-1-1	75	not satisfactory —
K.	2-0-0	9.2	suspicious.

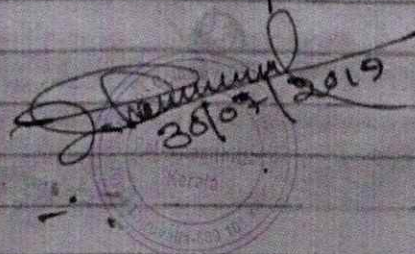
Analysis by.


Dr. Jenny Jacob


Dr. Shilpa Lekshmi

Countersigned by


HOD.
Bioscience.


30/07/2019


Results of Analysis ~~8/8/2019~~ 8th August 2019


Sample Points :-

- A - Office
 B - Library
 C - Cooler
 D - Biocampus
 E - Ladies hostel ~~old~~
 F - Ladies hostel ~~old~~ New
 G - 102
 H - 202
 I - 302
 J - 402
 K - 405
 L - Boys hostel


Sample	Result	MPN Count	Inference
A	2-0-0	9.2	Suspicious.
B	2-0-0	9.2	Suspicious.
C	2-0-1	14	Not satisfactory
D	3-2-1	150	Not satisfactory
E	2-0-0	9.2	Suspicious.
F	3-3-3	>1100	Not satisfactory
G	3-1-1	75	Not satisfactory
H	0-0-1	3	Satisfactory
I	0-1-0	3	Satisfactory
J	0-1-1	6.1	Suspicious.
K	3-1-1	75	Not satisfactory
L	2-0-0	9.2	Suspicious

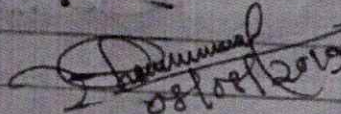
Analysis by


 Dr. Jenny Jacob


 Dr. Shilpa Lekshmi

Counter signed by


 HOD, Bioscience

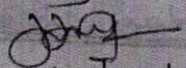



Results of analysis 22nd August 2019.

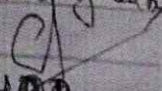
Sample Points:-

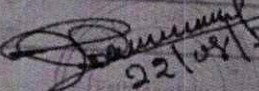
- A - 102
- B - cooler
- C - 302
- D - 402
- E - 405
- F - Biocampus.
- G - 202
- H - Office
- I - Library
- J - Boys Hostel
- K - Girls Hostel Old.
- L - Girls Hostel New.

Sample	Result	MPN Count	Inference.
A	1-1-0	7.4	Suspicious.
B	1-0-0	3.6	Satisfactory
C	2-2-1	28	Not Satisfactory
D	2-1-0	15	Suspicious
E	3-2-0	93	Not Satisfactory
F	1-2-0	11	Suspicious
G	2-2-0	21	Suspicious.
H	0-0-1	3	Satisfactory
I	0-0-0	<3	Satisfactory
J	0-0-0	<3	Satisfactory
K	0-0-1	3	Satisfactory
L	2-2-0	21	Suspicious.

Analysis by

 Dr. Jenny Jacobs


 Dr. Shilpa Lekshmi L

Counter signed by

 HOD
 Bioscience.


 22/08/2019

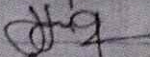
Results of Analysis on 5/9/19 (5th September)


Sample Points

- A - 102
- B - 202
- C - 302
- D - 402
- E - 405
- F - Biocampus
- G - Office
- H - Library
- I - Boys hostel
- J - Girls hostel ~~Old~~ New
- K - Girls hostel ~~New~~ Old
- L - Coolers


Sample	Result	MPN Count	Inference
A	2-1-0	15	Not satisfactory
B	1-1-0	7.4	Suspicious
C	1-0-0	3.6	Satisfactory
D	1-1-1	11	suspicious
E	1-0-1	7.2	Suspicious.
F	2-1-1	20	Not satisfactory
G	2-0-1	14	Not satisfactory
H	1-0-0	3.6	Satisfactory
I	0-0-0	<3	satisfactory
J	2-0-1	14	Not satisfactory
K	0-0-0	<3	Satisfactory
L	0-2-0	6.2	Suspicious.

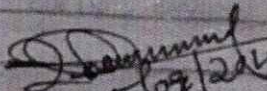
Analysis by


Dr. Jenny Jacob


Dr. Shilpa Lakshmi

Counter signed by


HOD Bioscience


5/09/2019

Results of Analysis on 14th October.

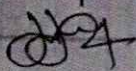
Sample Points

Student Batch
: S₃ PBT

- A - Office
- B - Library
- C - 102
- D - 202
- E - 302
- F - 402
- G - 405
- H - Cooler
- I - Boys hostel
- J - Girls hostel Old
- K - Girls hostel New.
- L - Biocampus.

Sample	Result	MPN Count	Inference
A	1-1-1	11	suspicious.
B	0-0-0	<3	Satisfactory
C	0-0-0	<3	Satisfactory
D	2-1-1	20	Not-Satisfactory
E	3-1-1	75	Not satisfactory
F	3-2-0	93	Not Satisfactory
G	3-2-1	150	Not Satisfactory
H	3-0-0	23	Not Satisfactory
I	1-1-1	11	suspicious
J	0-2-0	6.2	suspicious.
K	2-0-0	9.2	suspicious.
L	3-0-0	23	Not Satisfactory

Analysis by

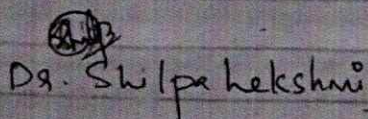


Dr. Jenny Jacob

Countersigned by.



HOD, Bioscience



Dr. Shilpa Lekshmi

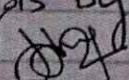
Results of Analysis on 7th November 2019


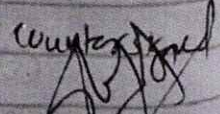
Sample Points

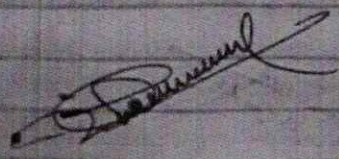
- A - 102
- B - 202
- C - 302
- D - 402
- E - 405 ✓
- F - Biocampus ✓
- G - Girls hostel Old
- H - Girls hostel New
- I - Boys hostel
- J - Coolers
- K - Offices
- L - Library

MSc Bioinformatics

Sample	Result	MPN count	Inference.
A	0-0-0	< 3	Highly satisfactory
B	2-1-0	15	Suspicious
C	2-1-1	20	Suspicious
D	3-2-2	210	Unsatisfactory
E ✓	3-2-3	290	Unsatisfactory
F ✓	3-3-3	> 1100	Unsatisfactory
G	1-1-1	11	Suspicious
H	1-2-0	11	Suspicious
I	3-3-3	> 1100	Unsatisfactory
J	1-0-0	3.6	Satisfactory
K	3-1-0	43	Unsatisfactory
L	3-2-0	93	Unsatisfactory

Analysis by

 Dr. Jeany Jacob


 Dr. Shilpa Lakshmi
 HOD

 Dr. Suresh

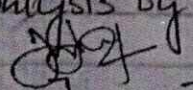





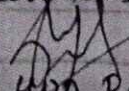
Results of Analysis OD 27th November 2019
 Sample Points :-

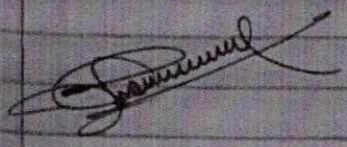
- A - 102 MBe Biochemistry
- B - 202 Jobina.
- C - 302 (exam)
- D - 402
- E - 405
- F - Biocampus
- G - Girls hostel old
- H - Girls hostel new
- I - Boy's hostel
- J - Cooler
- K - Office
- L - Library.

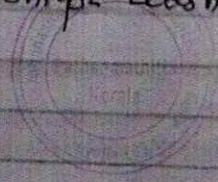
Sample	Result	MPN count	Inference
A	2-0-1	14	Suspicious
B ✓	2-2-1	28	Unsatisfactory
C	1-0-0	3.6	Satisfactory
D	1-2-0	11	Suspicious
E	1-1-0	7.4	Suspicious
F	1-2-0	11	Suspicious
G	3-0-0	23	Suspicious
H	3-0-0	23	Suspicious
I	1-0-0	3.6	Satisfactory
J	1-0-0	3.6	satisfactory
K	0-0-0	< 3	Highly satisfactory
L	1-0-0	3.6	Satisfactory.

Analysis by:

 Dr. Jenny Jacob


 Dr. Shilpa Lekshmi

counter signed by:

 HOD Biochemistry





Results of analysis on 12th December 2019

Sample points:-

A - 102

B - 202

C - 302

D - 402

E - 405

F - Brocampus

G - Girls hostel old

H - Girls hostel New

I - Boys hostel

J - cooler

K - office

L - Library

S₁ Biochemist

Sample	Result	MPN count	Inference
A	1-0-0	3.6	Satisfactory
B	1-1-1	11	Suspicious.
C	0-0-0	3	Highly satisfactory
D	0-0-0	3	Highly satisfactory
E	1-0-0	3.6	Satisfactory
F	1-0-0	3.6	Satisfactory
G	1-0-0	3.6	Satisfactory
H	1-1-0	7.4	Satisfactory
I	0-0-1	3	Satisfactory
J	0-1-1	6.1	Satisfactory
K	0-1-1	6.1	Satisfactory
L	0-0-1	3.	Satisfactory

Analysis by:

Dr. Jerry Jacob

Dr. Shilpa Lebsthri

Counter signed by:

HOD Bio science

Results of analysis on 4th February 2020
 Sample points:-

A - Office Biochemistry
 B - Library Batch I
 C - 102
 D - 202
 E - 302
 F - 402
 G - 405
 H - Cooler
 I - Boys hostel
 J - Girls hostel Old
 K - Girls hostel New
 L - Biocampus.

Sample	Result	MPN count	Interence
A	2-1-2	27	Suspicious
B	2-1-0	15	suspicious
C	2-1-2	27	Suspicious
D	2-2-1	28	Suspicious
E	2-1-0	15	Suspicious.
F	2-3-1	36	Suspicious.
G	2-1-1	20	Suspicious
H	2-1-0	15	suspicious
I	2-1-0	15	Suspicious
J	2-0-0	9.2	satisfactory
K	2-1-0	15	suspicious
L	2-1-0	15	suspicious.

Analysis by

Dr. Jerry Jacob

Dr. Shilpa Lakshmi

counter signed by:

Head Bioscience

Result of

Due to the nation wide lockdown, the water analysis was stopped unable to continue during the time period from March to August, 2020.

The water analysis was then restarted by September 2020.

Station	Sample No.	Date	Result
Station 1	57	3-1-20	A
Station 2	71	3-1-20	B
Station 3	45	3-1-20	C
Station 4	38	3-2-20	D
Station 5	21	3-1-20	E
Station 6	28	3-2-20	F
Station 7	40	3-1-20	G
Station 8	21	3-1-20	H
Station 9	21	3-1-20	I
Station 10	21	3-1-20	J
Station 11	21	3-1-20	K
Station 12	21	3-1-20	L



Result of analysis on 18th September, 2020

Sample Points

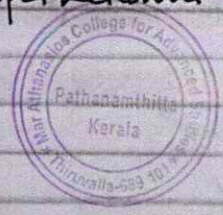
- A - Girls Hostel
- B - Cooler
- C - Library
- D - Office

Sample	Result	MPN/amt	Inference.
A	2-2-2	35	Suspicious
B	2-1-0	15	Suspicious
C	2-1-1	20	Suspicious
D	3-3-3	>1100	Unsatisfactory

Jenny Jacob

Shilpa Lekshmi

HOD Bioscience



[Signature]

Result of analysis on 27th September 2020

Source Point

- A - Girls Hostel
- B - Office.
- C - Library.

- A - Girls Hostel
- B - Office
- C - Library
- D - Office

Sample	Result	MPN Count	Inference
A	2-0-1	14	Suspicious
B	0-1-0	3	Satisfactory
C	2-1-0	15	Suspicious.

[Signature]

Jenny Jacob

[Signature]

Shilpahekshni

[Signature]

HOD/Bioscience

[Signature]



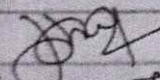
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Results of analysis on November 12, 2020

Source Points

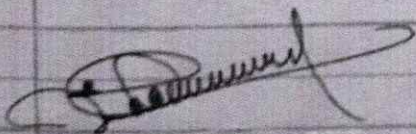
- A - Girls Hostel
- B - Cooler
- C - Office
- D - Library

Sample	Result	MPN Count	Inference.
A	0-0-1	3	Satisfactory
B	0-1-1	6.1	Suspicious
C	0-1-0	3	Satisfactory
D	1-1-1	11	Suspicious


Jenny Jacob

Shilpa Lekshmi

HOD Bioscience





Results of analysis on Nov. 27th, 2020

Source Points

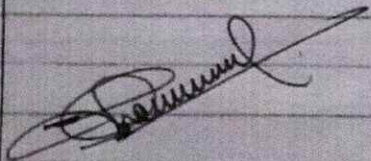
- A - Girls Hostel
- B - Office
- C - Library
- D - Cooler

Sample	Result	MPN Count	Inference
A	0-0-0	43	Satisfactory
B	0-1-1	6.1	Satisfactory
C	0-1-0	3.1	Satisfactory
D	1-0-0	306	Satisfactory

Jenny Jacob

Shilpa Lekshmi

HOD, Biosciences




Result of Analysis on Jan 15th, 2021

Source point

- A - Girls hostel
- B - office
- C - MCA department
- D - Bio campus

Sample	Result	MPN count	Inference
A	1-1-0	7.4	Suspicious
B	2-1-0	15	Suspicious
C	2-1-0	15	Suspicious
D	2-1-0	15	Suspicious

~~Sreechitra~~
Sreechitra.TV



~~HOD~~ HOD Bioscience

~~Sreechitra~~

Result of analysis on Feb. 4th, 2021.

Source point :-

- A - Hostel filter water
- B - college tap water
- C - Office.

Sample	Result	MPN count	Inference
A	2-2-1	28	unsatisfactory
B	1-2-2	16	unsatisfactory
C	3-8-3	1100	unsatisfactory

Sreechithra.PV

[Signature]
5/02/21



[Signature]
5/2/21
HOD

[Signature]

Result of analysis on March 1st, 2021.

Source point

- A - Food Lab
- B - Girls hostel (filter)
- C - MCA department.
- D - Bioscience tap water.

Sample	Result	MPN count	Inference
A	1-1-0	7.4	Suspicious
B	3-2-0	93	unsatisfactory
C	2-2-1	28	unsatisfactory
D	2-2-1	28	unsatisfactory

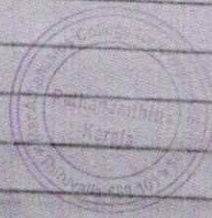
Sreechithra. TV

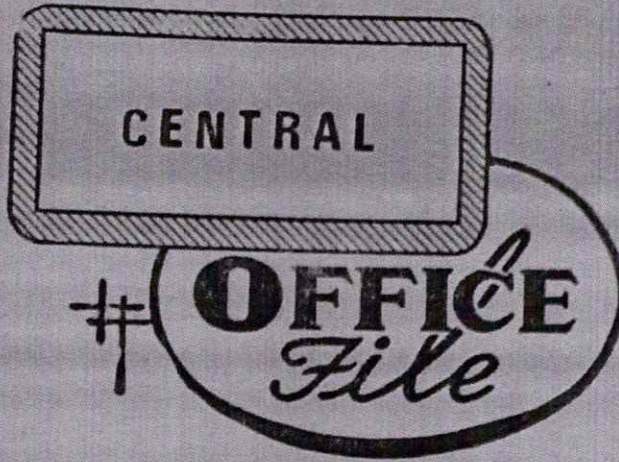
~~Signature~~
03/21.

~~Signature~~

~~Signature~~ 11/3/21

HOD





WATER ANALYSIS

EXTERNAL SAMPLES



CENTRAL PAPER MART
OPP. STADIUM, THIRUVALLA
PH : 2605113

405 ITC LAMINA TAG

M.R.P. ₹ 26.00 (Inc Tax)

**School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla**

Quality Parameters of Water

Name Of Customer : The General Manager, INKEL, Kochi

Date: 19/01/2021

Name of sample : Allura Drinking Water

Results:

Sl. No.	Name of Parameter	Result	Permissible Limit
1	Odour	Agreeable	Agreeable
2	Taste	Agreeable	Agreeable
3	pH	7.6	6.5 – 8.5
4	Turbidity (NTU)	0	5
5	Chloride (mg/L)	10	250
6	Total Hardness (as CaCO ₃) (mg/L)	Soft Water	200
7	Fluoride (mg/L)	0.5	1
8	Nitrate (mg/L)	0.0	45
9	Iron (mg/L)	0.0	0.3
Bacteriological Analysis			
10	Fecal Coliform (cfu)	0	0
11	E coli (cfu)	0	0

Analyst : Sreechithra T V


19/01/21

**School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla**

Quality Parameters of Water

Name Of Customer : The General Manager, INKEL, Kochi

Date: 23/11/2020

Name of sample : GHSS, Maroor, Pathanamthitta
Results:

Sl. No.	Name of Parameter	Result	Permissible Limit
1	Odour	Agreeable	Agreeable
2	Taste	Agreeable	Agreeable
3	pH	7.8	6.5 – 8.5
4	Turbidity (NTU)	0	5
5	Chloride (mg/L)	10	250
6	Total Hardness (as CaCO ₃) (mg/L)	Soft Water	200
7	Fluoride (mg/L)	0.0	1
8	Nitrate (mg/L)	0.0	45
9	Iron (mg/L)	0.0	0.3
Bacteriological Analysis			
10	Fecal Coliform (cfu)	0	0
11	<i>E. coli</i> (cfu)	0	0



Analyst :

[Signature]
23/11/20

**School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla**

Quality Parameters of Water

Name Of Customer : The General Manager, INKEL, Kochi

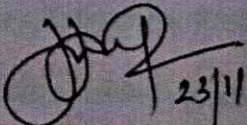
Date: 23/11/2020

Name of sample : GHSS, Adoor, Pathanamthitta

Results:

Sl. No.	Name of Parameter	Result	Permissible Limit
1	Odour	Agreeable	Agreeable
2	Taste	Agreeable	Agreeable
3	pH	7.8	6.5 – 8.5
4	Turbidity (NTU)	0	5
5	Chloride (mg/L)	10	250
6	Total Hardness (as CaCO ₃) (mg/L)	Soft	200
7	Fluoride (mg/L)	0.0	1
8	Nitrate (mg/L)	0.0	45
9	Iron (mg/L)	0.0	0.3
Bacteriological Analysis			
10	Fecal Coliform (cfu)	0	0
11	<i>E. coli</i> (cfu)	0	0

Analyst :


23/11/20

Name : CONSULTANCY WORK

Subject : FOR
WATER ANALYSIS

Year : _____



Item No. 666L

M.R.P. ₹.28.00 (Inc. Tax)

**School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla**

Bacteriological Analysis of Water

Name of sample : Prasad

Date: 21/12/20

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



**School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla**

Bacteriological Analysis of Water

Name of sample : Sudeep B Chandramana

Date: 19/11/19

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Super-chlorination of water body at 10g/1000L for one day followed by chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample : Sudeep B Chandramana

Date: 19/11/19

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Super-chlorination of water body at 10g/1000L for one day followed by chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



[Handwritten Signature]
19/11/19

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Thiruvalla

Bacteriological Analysis of Water

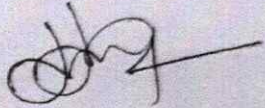
Name of sample :Jibumon KG

Date: 10/07/19

Result : The water sample has an MPN count of 9.4 which is near to normal levels.

Suggestion :Chlorination can be conducted once in 3 months to prevent overgrowth of bacteria.




Dr. Jerry Jacob
Assitant Professor
School of Bioscience
MACFAST

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

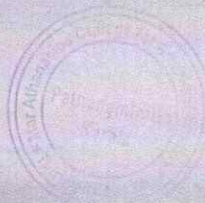
Bacteriological Analysis of Water

Name of sample : JINU (RECEPTION)

Date: 06/02/19

Result : The water sample has an MPN count of 15 which is near to normal levels.

Suggestion : Chlorination can be conducted once in a month to prevent overgrowth of bacteria.



[Handwritten Signature]
6/2/19

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample... Gripti Mohan

Date: 11/10/18

Result : The water sample has an MPN count higher than recommended for drinking water
with suspected presence of E.coli.

Suggestion : Chlorination of water body at the rate of 5g/1000L.



[Handwritten Signature]
11/10/18

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample... Jemy Jacob

Date: 11/10/18

Result : The water sample has an MPN count higher than recommended for drinking water
with suspected presence of E.coli.

Suggestion : Chlorination of water body at the rate of 5g/1000L.



A handwritten signature in black ink, appearing to be 'Jemy Jacob', located to the right of the stamp.

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample : Jisu (Reception)

Date: 11/10/18

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Super-chlorination of water body at 10g/1000L for one day followed by chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample : Julie K

Date: 8/10/18

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Super-chlorination of water body at 10g/1000L for one day followed by chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



[Handwritten signature]
8/10/18

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample...Reji P

Date: 8/10/18

Result : The water sample has an MPN count higher than recommended for drinking water with suspected presence of E.coli.

Suggestion : Chlorination of water body at the rate of 5g/1000L.



[Handwritten Signature]
8/10/18

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample : Varghese

Date: 8/10/18

Result : The water sample has an MPN count higher than recommended for drinking water with presence of E.coli.

Suggestion : Super-chlorination of water body at 10g/1000L for one day followed by chlorination of water body at the rate of 5g/1000L for 14 consecutive days.



[Handwritten Signature]
8/10/18

10.

The Principal
Mec Post College
Tinnur.

Sir,

I kindly request you to check the sample of
the water from my well to find the usefulness of the
same. Thanking you



Yours faithfully,

[Signature]

Gopikumar K.
Kottakkal Bmc
Punnakurru. P O
Pulincunna.

Ph 944 7349439.

Punnakurru
27.09.2018.

School of Bioscience
Mar Athanasios College For Advanced Studies
Thiruvalla

Bacteriological Analysis of Water

Name of sample...Gopakumar K

Date: 5/10/18

Result : The water sample has an MPN count higher than recommended for drinking water
with suspected presence of E.coli.

Suggestion : Chlorination of water body at the rate of 5g/1000L.



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5/10/18