JYOTHI ENGINEERING COLLEGE
LEAD KINDLY LIGHT
CREATING TECHNOLOGY LEADERS OF TOMORROW
ESTD 2002

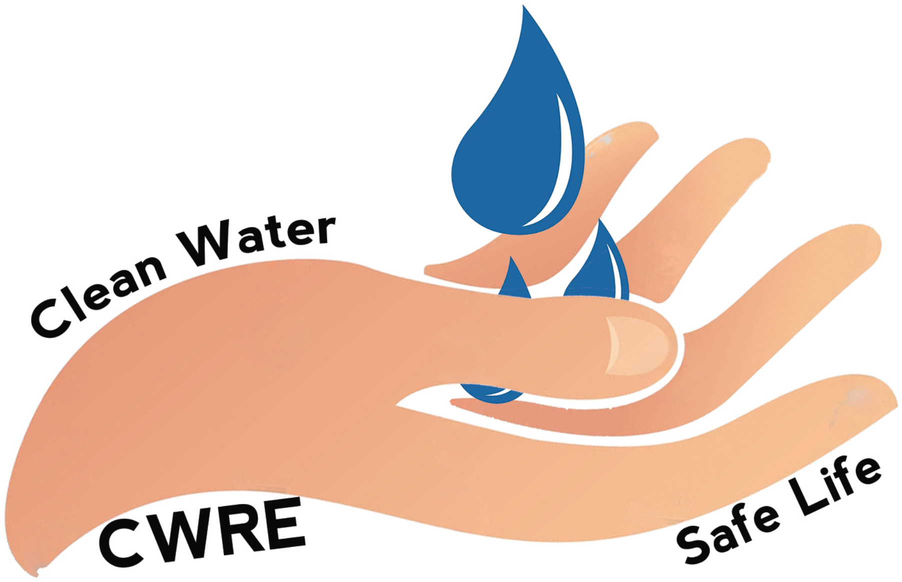
Jyothi Engineering College

CENTRE FOR WATER RESEARCH AND EDUCATION (CWRE)

(DEPARTMENT OF CIVIL ENGINEERING)

Performance Assessment Report February 2025,

In conjunction with the objectives of Unnat Bharath Abhiyan



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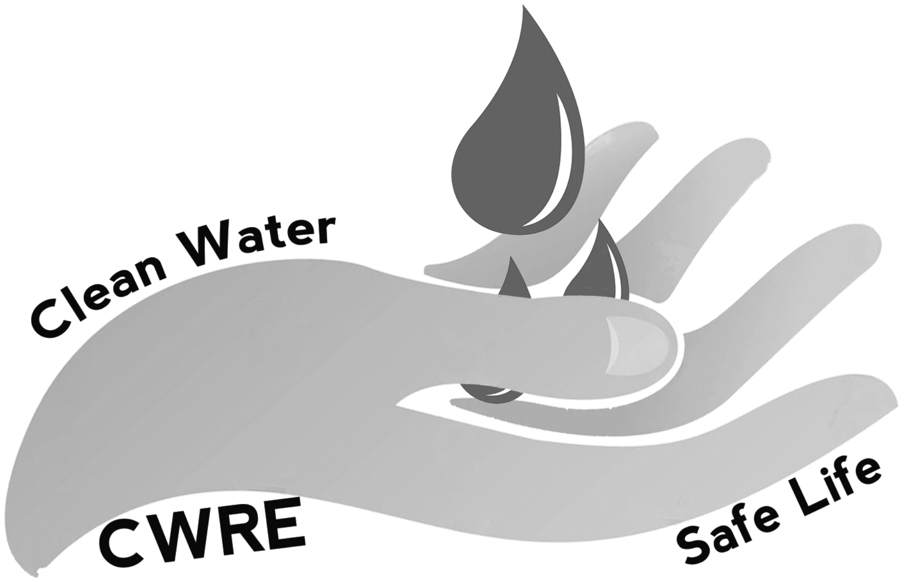

MESSAGE

I am delighted to know that Centre for Water Research and Education (CWRE) is publishing an up-to-date performance assessment report of its activities. It is also known that the system is constantly working for the remediation of domestic water quality issues.ie water quality issues of traditional water sources like wells , borewells etc Since water quality is a pertinent issue of the present era, such an establishment is beneficial for the people. CWRE has been functioning for a pretty long period by regularly involving in both academic and commercial activities. It is maintaining an approved commercial water testing laboratory and that is serving the people of the nearby area. The beneficiaries of the system include not only nearby people but also the staff and students of Jyothi Engineering college. It is also important that the activities of CWRE is in conjunction with Unnat Bharath Abhiyan to help the rural people I wish all success for all the activities of CWRE

Jyothi Hills
28-2-2025

Fr. David Nettikkaden
Executive manger

MESSAGE

After air water is the second primary requisite for the sustenance of life on earth and the primary source for drinking water is rain fall. Due to increase in population and concomitant developmental activities requirement of water has been increasing day by day. Now many areas in the world are water stressed and all the governments are devoting strenuous effort for providing safe and pure water to the people. while looking in that angle activities of Centre for Water Research and Education CWRE is a system which is very much beneficial to the people. It is also gathered that they undertake not only water analysis work but also field inspections and awareness creation and similar type of works. It is also having a government approved commercial laboratory. for helping the people of the nearby area. I congratulate the civil department for maintaining such a system and wish them all success

Cheruthurhty	**Fr. Dr. Jose Kannmbuzha**
28.2.25	**Academic Director**

MESSAGE

Water related awareness creation has been regarded as a primary requirement due to the fact that many areas are water stressed. Kerala and many parts of India is not an exception to this and both state and central governments gives serious focus on these issues. Various organizations under the government system are working to fulfill this need. Jala given mission is such an initiative of the Government of India which focusing on these aspects. It is a matter of serious consideration that in spite of all the developments in the water supply sector traditional drinking water sources continue to be the largely dependable for drinking water   and without that it is difficult to move forward. In this contest the functioning of CWRE is remarkable and the up to date report that they are publishing will be remarkable .. I congratulate the civil department in general and CWRE specially for imitating such an endeavor and wish success for all their activities

Jyothy hills
28.2.25

Dr. Jose P Therattil
Principal

MESSAGE

I am happy to learn that CWRE (Centre for Water Research and Education), Jyothi Engineering College has been functioning for a pretty long period.for welfare of the common people in water related issues Since pollution of traditional water sources is a prevalent problem in our state, the activities of CWRE are meritorious. Many objectives of CWRE are in conjunction with the objectives of UBA and its functions are highly beneficial to the people Now it is a remarkable movement that they are publishing an up-to-date activity report which invariably will help others to understand their activities for all . I congratulate Jyothi Engineering College for the support given for such activities and I wish success for all the activities of CWRE

Thrissur
28.2.25

Akhil.G.S
Project Com-ordinator
Unnat Bharath Abhiyan
Central Kerala Region
Kerala Agricultural University

MESSAGE

It is a matter of appreciation that CWRE is publishing an up-to-date report on its activities since its inception. Such a report will invariably be beneficial not only for Jyothi Engineering college but for all others who are inclined to initiate such activities. Pure and safe water is of foremost importance and people struggle for that not only in Kerala but in most parts of the world. Presently we are in need of more systems which work in tandem with CWRE to help the people for remediation of water quality issues. Basically, this is a fundamental requirement for all type of people especially in Kerala where people largely depend on traditional water sources for drinking water. Due to continuous exposure our staff are familiar with such activities and that enable them to involve in such activities and we really proud of this. It is also noteworthy that we work in conjunction with Unnat Bharat Abhiyan which is an initiative of government of India for helping rural people. I appreciate CWRE for all such activities and wish them complete success

Cheruthuruthy **Dr. V.M.Xaviour**
28.2.2025 **Registrar**

HIGHLIGHTS OF CWRE ACTIVITIES

RESARCH AND AWARENESS CREATION

a) Research Activities related to drinking water such as study on the quality deterioration of domestic water sources like wells, borewells, river pollution, and also study on low-cost water treatment equipments etc

b) Analysis of water samples and inspection of water sources for remediation of water pollution issues

c) Activities in conjunction with objectives of Unnat Baharat Abhiyan

d) One Day Awareness Training on Water Conservation for government employees like health inspectors and similar persons involved etc

e) Well chlorination for flood affected area lke that of 2018

f) Study on river pollution issues like that of Bharathapuzha

g) Water related student projects – Research on development of domestic low cost water treatment systems

h) Publishing books on water related subjects

i) Articles in the editorial page of newspapers on water related subjects

j) Water quality awareness competition for students

k) WhatsApp group for water quality remediation

l) Training to water professionals/ organizations on related subjects

m) Programme published for one day awareness for all categories of people

EXECUTIVE SUMMARY

Centre for Water Research and Education (CWRE) was established on 27.10 .2016 by an executive order of Fr Roy Joseph Vadakken, the then Secretary and Asst Manager, Jyothi Engineering College. The Centre aims at helping the people for remediation of various domestic water related issues. It maintains a government approved water testing laboratory and involves in all kinds of works connected with domestic water pollution control and related aspects. The Centre analyses water samples and study the prevailing environment and suggest remedies. During the period the Centre offered consultancy services to 800 nos of customers . While analyzing water samples we give concessional rate for analysis to staff and students of Jyothi Engineering College and for the customers from Cheruthurthy and Panjal Panchayaths. In case, if found essential we also inspect water sources for pinpointing the right method of remedy for the prevailing water quality issue.

Unnat Bharath Abhiyan and CWRE

One of the main agenda of these initiative is to fulfil the objectives of Unnat Bharath Abhiyan(UBA) in which Jyothi Engineering college is an active member with no C-8003

Activities Undertaken

1)Water quality analysis

CWRE maintain a govt approved c grade commercial laboratory and give assistance to general public on water quality analysis. During the period we have analyzed about 800 water samples from various sources and based on that we have identified relevant water quality issues in the area and published through various means.

1) Research activities

Undertaking analysis of water samples and based on requirement inspection of water sources to suggest remedial measure to solve the issues. During the period we have inspected 59 water sources as per the request of the customers and based on the study remedial measures were formulated and implemented in conjunction with customer demand and documented all the details systematically.

2) Awareness creation activities

The Centre involved in various awareness creation activities during the period

a) 2nos of workshops for health inspectors, Asha workers, students, panchayath members 1.6.2019.and 22.08.23
b) Interaction with general public on water related subjects directly and also over phone
c) Publishing books on the subjects ie Jalavum Jeevithavum and Jalasuraksha Nithya jeevithathil and online distribution
d) Maintain a WhatsApp group on water related subjects and interaction through it
e) Conducting quiz competition among students on water quality related subjects and give cash prize and certificates to the students
f) Publishing water issue related articles in newspaper editorial page – during the last year 14 articles were published in Deepika newspaper editorial page
g) Students are also associated with all the above-mentioned activities
h) Preparing and proving reports for various organizations for remedial measures of water quality issues
i) Undertaking student project related to water
j) Providing training to organizations involved in water related activities
i) Surveillance water quality checkup of water supply to Jyothi Engineering college

As a part of our commitment to resolve flood related issues, we have analyzed free of cost 964 water samples in 2018 from various parts of the district and also involved in chlorination of 37no of wells in the Cheruthuruthy Panchayath as a joint venture with Panchayath and State Health Department. We also give special trainings to students on remediation of domestic water quality issues so as to get trained in the commercial part of the case which enable them even to run a profitable business. We undertake ample number of students project in every year on water quality with an objective to benefit the students we have completed the study on the pollution scenario of Bharathpuzha,, the second longest river in the state. For that we have signed an MOU with FOB (Friends of Bharathpuzha) a social organization headed by matroman Dr E Sreedharan. We have earlier completed an interim study on Bharathpuzha as a combined effort of JECC, IIT, Palakkad, Jawaharlal college of Engineering, Lakkidi as per the initiatives of Water Resource Department Government of Kerala. We have also been appreciated by additional chief secretary for the timely and effective completion of the work.

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1. Introduction

Traditional water sources are the special feature of Kerala state. It is gathered that we have more than 70 lakhs of wells in our state. Almost all the houses are having separate wells. Due to the high density of population, there exist close co-existence of water and polluting sources and hence there is proximity for intrusion of waste water in to the water source Due to this, domestic pollution is predominant for the traditional water sources. Many practices adopted by the people are also not good in this respect. While constructing a house we have to adopt a proper environmental planning of the house and the surroundings in order to maintain a environmentally conducive atmosphere which provides a healthy environment.

Centre for Water Research and Education (CWRE) was established on 27-10-2016 as a subsidiary of Civil Engineering department, Jyothi Engineering College, Cheruthuruthy. The Centre aims at providing services to the people on remediation of various water issues such water quality, rain water harvesting, water treatment and with special focus on maintenance of domestic water sources. The Centre maintain a govt approved water testing laboratory with facilities for analysis of conventional water quality parameters. We also inspect domestic water sources like wells and bore wells and give suggestions to the people on various water quality and related issues. This report encompasses the various activities taken up by the Centre during the past seven years since its inception in 2016

2. Objectives CWRE & Unnat Bharath Abhiyan

The main objectives of setting up the CWRE is as follows

Providing services to the general publics on water related issues so as to provide them clean and safe water and involvement of students in this process

Objectives of Unnat Bharath Abhiyan

The Mission of Unnat Bharat Abhiyan is to enable higher educational institutions to work with the people of rural India in identifying development challenges and evolving appropriate solutions for accelerating sustainable growth.

Specific objectives

- Opportunities to the general public on water awareness
- Opportunities for personal interaction on water related issues during normal collegeworking hours
- Analysis of water samples at a nominal fee
- Conducting trainings on water related subjects to the various categories of people on water related issues
- Inspection of water sources for providing remedial measures
- Publishing booklets on water related issues
- Providing consultancy services to people on various water related issues
- Carry out research on water related issues pertaining to domestic water sources
- Providing free website/ whatsapp information to the people on water and sanitation
- Dissemination of knowledge on water related issues especially on domestic waterquality so as to benefit people on remediation of water related issues
- Student involvement in water quality remediation activities
- Testing of water samples at a nominal fee

3. Present Office Bearers

The center is under the civil department and generally the HOD of civil department and it ishaving a coordinator and Asst coordinator to look after the day today affairs

Present office bearers are as follows

1) Dr .Vincy Verghese. HOD Civil
2) M.G. Cyriac- Co Ordinator CWRE
3) Anna Joseph Assistant Professor Civil Engineering- Asst co-Ordinator ,CWRE
4) Jeffy Johny ,Assistant Professor
5) Vini.P Sanitory Chemist
6) Shima Paul, Bacteriologist in charge
7) Ignatius. T.F staff

Office Bearers of CWRE

Dr Vincy Varghese HOD CIVIL   M.G. Cyriac ,Co Ordinator   Anna Joseph Asst Co-Ordinator

Mrs   Jeffy Johny staff   Mrs . Vini P Sanitary chemist   Ignatius.T.F   staff

Mrs Shima Paul ,Bacteriologist in charge

Fig 1 Office Bearers of CWRE

4. Communication Systems

- Through website
- Through telephone
- Through newspaper articles and books
- Inspection of water sources. direct discussion of water quality etc

CWRE maintain its own website ***cwre . jecc.ac.in*** and also link from Jyothi Engineering college website ***research highlights Centre for water research and education***. Various relevant materials are provided in the web site. Telephonic information are transferred to the people regularly on demand. We also write newspaper articles and various books relevant to the subject. In case the situation so requires we go direct to the site and inspect and give information to the people

5. Accreditation of the water testing laboratory

The Centre maintains a Govt. approved water testing laboratory. The accreditation details are given below. The laboratory is accredited by the Kerala State Pollution control board

Table 1 details of accreditation of the laboratory

Sl. No	Period of accreditation	Order number
1.	13.10.2015 to 31.10.2017	PCB/LABAPPROVAL/85/2015 DATED13.10.2015
2.	11.12.2017 to 30.10.2019	PCB/LABAPPROVAL/85/2015 DATED11.12 .2017
3.	29.11.2019 to 29.10.2021	PCB/LABAPPROVAL/85/2015 DATED29.11.2019
4.	30.10.2021 to 29.10.2023	PCB/LABAPPROVAL/85/2015 DATED 9.11.2021
5.	30.10.2023 to 29.10.2025	PCB/LABAPPROVAL/85/2015 DATED 9.11.2023

6. Analysis of Water Samples

Analysis of water samples and finding out the remedy for water quality issues is the core activity of the Centre. The details regarding the various analysis procedures are mentioned below. Mainly analysis is divided in the following

- Private water samples
- Water samples pertaining to college water supply system
- Analysis of water samples for training the students

6.1 Analysis of private water samples – rate for analysis and other details

We undertake analysis of private water samples on a nominal fee and the details about the fee structure are as follows. The main purpose of approaching the laboratory is remediation of water quality issues. We undertake the work and suggest remedial measures. we also issue the customer small booklets on water quality issues so as it is helpful to the customer. The rate for analysis is as follows

Table 2- Analysis Rate

Sl.No	Parameter	Rate for Analysis in Rupees
1	Turbidity	25
2	pH	25
3	TDS	25
4	Alkalinity	60
5	Total Hardness	60
6	Chloride	75
7	Fluoride	75
8	Nitrate	85
9	Iron	75
10	Manganese	75
11	Sulphate	50
12	Sulphide	50
13	DO	60
14	COD	150

15	BOD	150
16	Oil and grease	300
17	Residual chlorine	20
18	Suspended solids	50
19	Coliform /100ml	300
20	E_Coli /100ml	300

- The parameters to be tested is to be fixed after interaction with the customer depending upon his interest and his requirement. To be fixed by the interacting person, Co-Coordinator/HOD/Asst. Co-Ordinator
- Concessional rate For all staff including contract staff @60% of prescribed cost subjected to a minimum of Rs 200
- For residents of Panjal and Vallathol Nagar grama Panchayaths water testing rates are fixed at 75% and the minimum is fixed at Rs250 on production of residence proof.

6.2 Private water quality Analysis

Private water quality analysis is taken up based on a demand driven approach. The people approach the laboratory for various purposes like remediation of water quality issues, obtaining license from government organizations etc

The number of private analyses in each financial year and the amount received are furnished below

Table 3 Revenue for each financial year

Sl. No	Year	No of samples analyzed	Amount Received
1.	2016-2017	14	Rs 2558
2.	2017-2018	17	Rs 6654
3.	2018-2019	68	Rs 35975
4.	2019-2020	76	Rs 50216
5.	2020-2021	49	Rs 30200
6.	2021-2022	59	Rs 36396
7.	2022-2023	133	Rs 110200
8.	2023-2024	142	Rs 120000
9.	2024-25	170	Rs 185000
	Total	**728**	**Rs 577199**

The details in respect of all the private analysis are given in appendix A

6.3 Analysis of water samples under the save Thrissur program

The programme was initiated by the diocese of Thrissur to help the people on account of water pollution caused by the flood of 2018 . the programme includes analysis of water samples from various places in the district

Under this programme we analyzed 964 water samples and details of which are furnished as below

Table 4 Analysis data under the save Thrissur program

Sl No	Place	No of samples	Amount
1	Velour	67	9940.00
2	Chittissery	83	11850
3	Nedupuzha	457	80940
4	Manalaur	355	63,740
	Total	964	1,67,350

The work was carried out free of cost as per instruction from the management

6.4 Surveillance water quality monitoring of Jyothi Engineering college

The laboratory also undertakes analysis of water samples pertaining to the college water supply scheme. It includes testing of water samples of sources, open well and bore well based on the testing results are recorded and issued for interpretation. The effectiveness ofthe chlorinating unit is also assessed by CWRE officials periodically

6.5 Concessional rate for water analysis

However, we provide concession to various categories of people as given below

- Staff of college, students@ 40 % on analysis rate subjected to a minimum of Rs 150
- Consumers belonging to Vallathol Nagar grama panchayaths and Panjal Panchayaths Minimum @25% subjected to a minimum Rs 200

7. Other activities for research and Education

Apart from testing of water samples we undertake various activities for creating awareness among the people and also as a social commitment Important works are

detailed below

a) Research Activities related to drinking water such as study on the quality deterioration of domestic water sources like wells , study on river pollution , study on low cost water treatment equipment etc
b) One Day Awareness Training on Water Conservation on 1.6.2019 and 22.80 2023 Unnat Bharath Abhiyan activities
c) Well chlorination for flood affected area in 2018
d) Study on the abatement of Polluted stretch of Bharathpuzha from Kalpathi to Thrithala as a Govt of Kerala initiative
e) Water related student projects –
f) Publishing books on water related subjects
g) Water quality competition for students
h) Articles in the editorial page of news papers
i) WhatsApp group for water quality remediation
j) Competition for students on water quality

7.1 Research Activities

The center apart from testing of water samples undertake inspection, study and evaluation of Water sources for identifying the level of pollution. It also try to assess the pollution scenario Traditional water sources like wells and open well and try to add it to the water quality. we have made 64 such inspection during this year and the details are listed below

Table 5 Inspection details of water sources

Sl. No	Date	Name of water source	Problem action taken
1	30.11.2017	Saritha N, Mullurkkara	Issue not serious given instructions
2	07.04.2018	Jasir kottampathur, pallam, cheruthurthy	Slightly excess , little organic matter , given guideline
3	07.07.2018	Raveendran, chelakkara	Organic pollution , instructed and rectified

4	07.07.2018	Dinesh, shornur	Dark colour for boiled rice, excess iron
5	20.09.2018	Anitha, Erumapetty	Size big. advised to improve the well
6	27.11.2018	Bhagyalakshmi Lakshminnivas, cheruthuruthy	Contamination from m nearby hotel students engaged Robby and Albin
7	30.11.2018	Gouridas , Palakkal, Cheruthurthy	Excess iron and COD
8	13.04.2019	Girishkumar N.G Greeshmam, Cheruthurthy	Polluted iron excess advised to remove the polluting source, students involved, Sarath and Reshma
9	19.06.2019	Subin , Thushara karakod , shornur	No serious issue only little iron advised to chlorinate
10	1.07.2019	Seenia Francis , Ollur	Nearby gold processing, hence low pH and other effects
11	25.07.2019	Sunny rosevalley, panjal	Slight COD, adviced to aerate
12	07.12.2019	Akhil Balakrishnan EEE	Slightly excess iron
13	28.01.2020	Lakshmanan, Painkulam	Smell ,colour change, no serious issue
14	08.03.2020	Hanumon , maniyattil, Panjal	No apparent effect noticed
15	29.06.2020	Saleem Thekkeparambil, Cheruthurthy	no issue identified
16	22.10.2020	Aswathy rajan EE E staff	No issue identified
17	17.11.2020	Ali.KI kinattunkal house, cheruthurthy	Highly polluted , rectification suggested
18	01.01.2021	Victor manjilla, Kainoor	Polluted , instructions issued
19	29.01.2021	Suhara,Vattaparambil, Cheuthuthy	Low pH, only slight COD

20	30.01.2021	St Joseph church, pangarapplly	Pollutted ,Remedy suggestedv
21	27.02.2021	Vidhu, Vadakoottu, Elanad	Highly polluted, instructed to remove the polluting source
22	27.02.2022	Ali pottayil Thazhapra	Alge growth – remedy suggested
23	06.03.2021	Sardhar, Cheraparambil, Nedupura	High iron , suggested rectification
24	23.03.2021	Shaicy P.Shaju	Smell due to excess sulphate
25	24.03.2021	Shafeeque, Korappanalukkal, Mullurkkara	Polluted high COD ,due to kitchen waste advised rectification
26	09.04.2021	Hassan BA Begalau parambil, Vettikkattiri	Slight iron , No issue
27	26.07.2021	Shajan. MK Mdathiprarambil, Thazhapra	COD, advised rectification
28	16.09.2021	Santhosh kumar nanmbarth Mecherikkunnu, Cherutheurthy	Highly polluted advised rectification
29	17.11.2021	Variyathupady jaloapayogasangam, Thruvilamala	Excess iron ,coliform advised to proper chlorination
30	20.11.2021	Sunil kumar Shornur	No pollution, advised
31	25.02.2022	Abdulla, panjal	No apparent issue
32	25.02.2022	Manikandan, Nedupura	Pollution, identified the source
33	22.02.2022	Shameer .C.H, Cheruthurty	Pollution, identified the source
34	10.05.2022	Musthafa ,vettikkattiri	Pollution , identified the source

35	17.05.2022	Aasad M.S, mullakkal, nedumpura	Pollution source identified
36	26.10.2022	Jameela. padavangottujalil, panjal	Highly polluted , suggested remedies
37	25.01.2023	Seena, Aattoor	Polluted, very high iron
38	28.01.2023	Sandeep, Koolath panjal	Excess iron ,turbidity
39	28.01.2023	Sumathi, Ponnamkunnath pallam	Highly polluted excess iron ,given instructions
40	17.01.2023	Dr Biju CV mechanical department	Slight COD ,smell discussed with client Student involved
41	20.03.2023	Ali p.k ,Pottayil Tazhapra	Algae grwith suggested remedies Student involved
42	26.03.2023	Rahulraj, nambrath, cheruthurthy	Apparently no seriou s Student involved
43	30.03.2023	Iqbal mavaduyil, Cheruthuruthy	No serious issue
44	03.05.2023	Vintha pallam, Pallikkal	No serious issue
45	25.05.2023	Anshif, vettikkattiri	Pollution ,given instructions
46	09.06.2023	Devadas .TN, Viyyur	Suggestion given Student involved
47	19.07.2023	Surendran, valiyakunna, Panjal	Pollution identified Student involved
48	10.08.2023	Sojan, Pazhayannur	Algae problem Student involved
49	13.12.2023	Gangadharan, Killimnagalam	Pollution rectified Student involved
50	07.03.2024	Devamatha province Thrissur	Explained the problem Student involved
51	13.03.2024	Jinsy staff	Slight COD
52	26.03.2024	Sumesh,Vettikkattiri	Slight COD Student involved
53	31.5.2024	Muhammadali, menacherry	Pollution source identified Student involved

54	29.06.2024	Father ajeesh, Cheruthurythy church	Pollution identified Student involved
55	30.08.2024	Pallam paithal jaram, Pallam	Direction given Student involved
56	07.09.2024	Arun , Kottaprambil , Nedupura	Pollution identified Student involved
57	01.10.2024	Vinod Menon ,shornur	Identified the problem Student involved
58	5.10.2024	Anas ,Keezhtully, Nedupura	Demonstrated the issue Student involved
59	4.12.24	Muhammed , kaippanchry ,pallam	Excess iron, adviced to use filter
60	17.12.24	Kilimangam ,Kavathuvilakku ,committee	Inspection of water source for preparation temple ulsav
61	18.12.24	Noushad mullurkkara	Smell for water, adviced to use filter
62	1.2.25	Shafeer, Nedumpura	Over pumping, well destroyed, given advice
63	12.2.25	Ansil,Vettikkattiri	Domestic pollution , given advice for rectification
64	12.2.25	Razak , Puthiyaveettil , Vettikkattiri	Smell , given advice

The study along with literature review revealed various remedial measures and that are appended in appendix B. The scenario with many waters' sources area shown below in figures

Pictorial representation of well pollution sites and inspection details

.

FIG 2 Algae growth in well of Sri ALI Pottayil, Thazhapra

Fig 3 Well of Ali , Cheruthurthy due to algae growth after treatment

Problem was growth of algae . treatments were applied like covering the well to prevent incidence of sunlight and chlorine to weaken the algae attack. it improved

Fig 4 Algae Growth Scenery During Summer – belongs to Manjush JHI after treatment.Algae Growth Corrected Through Treatment

Fig. 5 Oily appearance on the water surface typical in many areas before treatment Sumathi, Ponnamkunnath pallam

Fig 6 Well of Sumathi,
Ponnamkunnath pallam after treatment

Fig 7 Iron presence in Well at Bheemanady, Kasargod district
Interaction over tree in phone. Advised to adopt treatment in water tank

Fig 8 Algae growth in well at Desamangalam.
Just given advice and the customer himself corrected

Fig 9 Continuous pumping spoiled the well, asked to wait avoid Excessive pumping

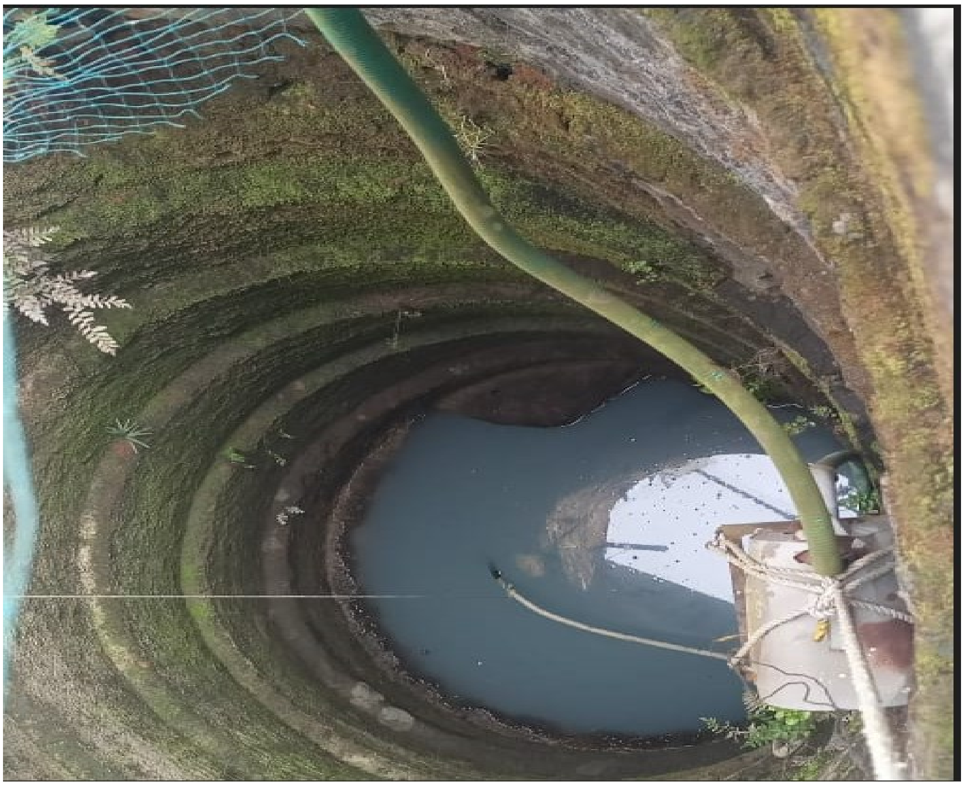


Fig 10 White color for water well at pallam. Probably due to Zinc or Silica or Air bubbles -Under study

Fig 11 Inspection of well by prof Cyriac .M.G Co Ordinator of CWRE well of Muhammadali, menacherry during 5/24

The main issue noticed is that the disposal pollutants are not in a proper way and that contaminates the well. advices to rectify

Fig 12 Services to Ashraf Kilimanagalam- Inspection of well by Prof cyriac. Very low pH value .Gold processing unit nearby

The area had been used for gold processing the pH value is very low say about 4.5. sour taste for the water . given advice but he opted another water source ie water supply by Jalanidhi

Fig 13 Well inspection by Prof Cyriac at residence of Hamaza Mullurkkara, irrelavt waste water disposal

Poor disposal of household waste created the issue, well is contaminated by intrusion of waste water from the house. given advice

Fig 14 Inspection well at Pallam of Muhammed. Contamination from septic tank .Repaced agreement between parties. Negotiated

Well Water is having High COD , suspect intrusion from nearby septic tank owned another person both came to the site aired to remove the septic tank

Fig 15 Well inspection at Cheruthurthy – There is no issue , but doubt about the quality – Cleared

Fig 16 Inspection well owned by Shafeer, Cheruthuruthy – problem due to excessive pumping. – adviced treatment

Fig 17-1 Well at Vettikkattiri spoiled by inflow of waste water

Fig 17-2 Well of subair , vettikktatiri ,Problem with decorative fish , advice given rectified

7.2 Awareness on water conservation was conducted on 1.6.2019 and 22.8.2023 Unnat Bharath Abhiyan activities

Two programmes were conducted in the date mentioned above. the main aim was to train the health officials and those who can help the general public. in the first program on 1.6.2019 it was attended by 43 persons and second programme attended by 53 persons that includes mainly health inspectors' college staff and students. The programs were appreciated by the concerned. The details about each program are appended. the programme on 1.6.2019 is appended as appendix C and the programme on 22.08.2023 is appended as appendix D

7.3. Well chlorination for flood affected area in 2018

August 2018 marked the month of severe flooding which affected the south Indian state Kerala due to the unusual hype in rainfall in the monsoon season. It was the worst flooding in Kerala has seen in nearly a century. One-sixth of the total population of Kerala had been directly affected by the floods and related incidents. Kerala had received heavy monsoon rainfall which is about 257% more than the usual rain fall recorded in Kerala. By mid-evening of 8th August 2018, the state received 310 mm (12 in) of rainfall in the first 24 hours itself. Almost all dams have been opened since the water level had risen close to overflow level due to heavy rainfall, flooding local low-lying areas.

As a part of the flood relief programme, the Jyothi Engineering College students in coalition with the Vallathol Nagar Grama Panchayat and the Health Department contributed towards the disinfection of well water and assessment of its quality in highly affected areas of Vallathol Nagar Grama Panchayat on 30/08/2018 and 31/08/2018.

The process of disinfection of well water involves chlorination. The chlorine was added in the wells of affected houses by a team consisting of students and representatives from panchayath and health department. The chlorination process is used mainly to prevent the spreading of waterborne diseases like cholera, dysentery and typhoid. The chlorination was done only in wells used by the inhabitants for the drinking purpose. These were mainly non-protected hand dug wells with rope and bucket as extraction system. The activities mainly involved were treating well water with bleaching powder and the concentration of the residual chlorine was determined 24 hours later.

- Pallam,
- Puthusseri
- Cheruthuruthy Town
- Mecheri
- Kulambu

METHODOLOGY

Investigate flood affected areas

⇩

Identify Overflowed Wells

⇩

Gather necessary supplies and find the volume of well by calculating diameter and height in litres

⇩

20-30g of cholorine is added to per 1000 litre of total water Calcuated chlorine amount is mixed with well water in two methods : one by dilution and the other by vigurous shaking of clothbags filled with chlorine inside the well

⇩

Leave the chlorine to mix in the well for a minimum of 24 hours

⇩

The water is then tested for chlorine quantity using Ortho tolidine

⇩

The Result is observed and recorded

Fig 18 Procedure followed for flood chlorination

1) Measure diameter of well (d).
2) Measure the depth of water in the well (h).
3) Calculate the volume of the water in the well using the equation $V = \pi r^2 h \times 250$.
4) From the calculated values, take half amount of chlorine powder in a bucket and make it as a paste by thorough mixing. Add most amount of water and dilute it. Cover the bucket with a lid and wait 10min for settling, until the upper portion become clear.
5) This clear water is then poured into the well water and mixed well. The remaining chlorine is taken in a cotton cloth and is kept dipped to the bottom of the well for 24hours.
6) Well water should not be used for 24hours. After 24hours, collect sample from well in a test tube and add 2-3 drops of Orthotoludine
7) Note the color changes.

Fig 19. Well Chlorination due to flood in 2018

43 students participated in the programme. They advised the people on various waterpollution control measures. The programme was a grand success

7.4. Study on the abatement of Polluted stretch of Bharathpuzha from Kalpathey to Thrithala

Study on the Pollution scenario of Bharathapuzha , the second longest river in the state isbeing undertaken by the college in three sections

1) As a part of Memorandum of understanding with Friends of Bharathpuzha , which is a social movement headed by Dr E Sreedharan ,popularly known as metro man. the work is progressing and we will be doing till June 2021 to obtain more clarified assessment of the pollution scenario

Fig20 Sri E Sreedharan Matroman

2) A programme jointly organized by WRD Govt of Kerala as detailed below

National Green Tribunal (NGT) has ordered for rejuvenation of 21 critically polluted rivers in the state, and as a first step, it was required to prepare a Detailed Project Report (DPR) on the pollution scenario of all those rivers. In order to comply the order, within the short span of time, Department of Water Resources, Government of Kerala has made tie up with Engineering Colleges in the State for development of DPR for rejuvenation of those rivers. In this context, Indian Institute of Technology Palakkad, Jawaharlal College of Engineering and Technology, Lakkidi and Jyothi Engineering College, Cheruthurthy have joined together and prepared a detailed report highlighting the possible and practicable measures for the rejuvenation of Bharathapuzha. Friends of Bharathpuzha (FoB), a collective formed under the leadership of Dr. E Sreedharan with an objective of conserving and rejuvenating Bharathapuzha has become a collaborator of this study. The report was prepared and submitted to the Water Resource department. All the three colleges were appreciated by the Additional Chef Secretary home on behalf of Government of Kerala

Abatement of Polluted Stretch of Bharathappuzha River from Kalpathy to Thrithala

Detailed Project Report

Fig 21 Cover page of Project report submitted to Govt of Kerala (WRD)

Submitted to

Water Resources Department, Government of Kerala

Water Resources Department,
Government of Kerala

Prepared by

Department of Civil Engineering

Indian Institute of Technology Palakkad

Jawaharlal College of Engineering and Technology

Jyothi Engineering College

February 2021

7.5 Water Related Student projects

The centre is regularly taking care of student needs. As a part of the topic beyond syllabus we teach the domestic water quality issues in the state with special focus on various water quality treatment equipment available in the market. Training is also given on testing of water quality using kits . For student also concessional @ 40 % is given . Students are also provided with facilities for utilizing the laboratory for project work. the project work carried out under the auspices of this centre in various years is given below

A group of students are doing a student project on the pollution scenario of Bharatahapuzha . Name of the project is **ASSESSMENT OF POLLUTION SCENARIO OF BHARATHAPUZHA AND REMEDIAL MEASURES**

Name of students in the group Anto Raffy (JEC17CE015) Irene Francy A (JEC17CE034)

Nimmi Rose Anto (JEC17CE043)Varsha Vinod (JEC17CE056)

The Project is guided by Prof M.G.Cyriac

Published in the international journal for water

2016-2017

Water quality assessment and remedial measures for traditional sources of vallathol Nagar Grama panchayath Simulation and modelling of water supply system in Jyothi Engineering College usingEPANET

2017-18

- Water quality assessment and remedial measures for traditional sources of vallathol NagarGrama panchayath
- Water audit and optimum solution for deficit management in Jyothi Engineering College
- Augmentation of water treatment plant for Vallothol Nagar Grama panchayat
- Designing water supply system for thekkamkara panchayath
- Waste water management of Jyothi Engineering College

2018-19

Planning and Design of Kumbharan colony

- Design of plumbing system for a high-rise building
- Dissemination of water quality issues and its remedies through a social media
- Water quality variation with respect to water table in vallathol nagar grama panchayath
- Study of chlorine decay in water distribution system using EPANET software Performance and evaluation of community water supply scheme in Mullurkara Panchayath

2019-2020

- Waste water treatment using biochar and activated carbon as a permeable reactive barrier
- Temporal and strata based evaluation of physico-chemical water characteristics of Peechidam
- Estimation of PH range on coagulation of dairy waste for turbidity removal

2024-25

a) **Design of swimming pool for Jyothi Engineering college.**

Swimming pools come in all different types and sizes, with hot or cold water, used for bathing or swimming, for relaxation or for competitive purposes. The most appropriate construction type should be built according to the site conditions and functions. Thus, design choices relating to shape, size and depth will also depend on requirement. There is a proposal for swimming pool to be constructed in Jyothi Engineering College. so a group of students were assigned to design a swimming pool of capacity 25m length x 13 meter width (semi Olympic). It also proposed to construct a guest house near the swimming pool . Isometric view is shown below

Fig 22 Proposed swimming pool at Jyothi Engineering College

b)Low – Cost Iron Removal for Traditional Water Sources of Kerala

Project undertaken under the Centre by students Emilda John, Gokul and Jackson
Guided by Anna Joseph

Assumptions & Guidelines

- We have taken the total of 6 samples from Thissur and Palakad district of Kerala for the study.
- Since the Iron presence is uniform in state of Kerala .we assume that this equation is applicable everywhere in the state.
- There can be slight variation for certain / few samples and in such cases .Customer can make modifications.
- The adopted procedure can be used for conducting sample study for a particular sample depending upon the characteristics.
- In the regression analysis removal efficiency is slightly reduced so that the results are more practicable and genuine.
- Before iron containing water is admitted to the filter aeration followed by sedimentation can be performed as an auxiliary step for iron removal but rate of aeration and sedimentation varies from sample to sample . In certain

samples having iron upto3.5 mg/litre 50 % removal is possible aeration followed by 12 hour sedimentation .

Conventional Filter(Normal Filter Available in Market)

Fig 23 Conventional Filter

In commercial methods different types filtering models are used for the filtration process. These filtering models are mainly produced by different companies. We had a social survey and studied about filters and their limitations and develop a filter to satisfy these limits.

Their limitations

Rate of filtration is high

Pressure control is not eas

Less contact time

High cost

Frequent complaints

Backwash Issue

So, we had modified and develop a filter system and overcame its limitations at low cost and with low rate of flow ,gravitational flow no pump system been used. increased the contact time helps to remove iron content and produce high efficiency compared to market available filters, using the highly oxidizing adsorbents in filter units .

Design calculation and Iron content removal using these adsorbent

1. Low Cost Filter Unit Developed

Fig 24 low cost filter unit developed

- PVC Pipe of 160mm dia. With 4kg capacity.
- 25mm PVC pipe
- 160mm MTA(Male threaded adapter) & FTA(Female threaded adapter)
- 160mm End-cap -Treaded and Paste
- 25mm Union
- 25mm Valve

EXPERIMENTAL SETUP

The working model set up developed for remove iron content with adsorbents in the filters.

EXPERIMENTAL SETUP

The working model set up developed for remove iron content with adsorbents in the filters.

Fig 25 Experimental Setup

Procedure

1) Iron containing water is filtered through each filter with varying depth, initial iron concentration, Varying pH Value, different rate of filtration that can be adopted at domestic level
2) Series of readings were collected and regression analysis was performed with suitable assumptions

Dependent Variable – Removal Efficiency

Independent variables

1) Initial pH value
2) Original Iron
3) Rate of filtration
4) depth of filter media

3) From the regression equation quadratic equation is formed and thereby the possible removal of Iron through 50cm depth of filter media is solved

The design of depth using regression analysis for MnO2

Similarly, we can input the values and find the depth of Mno2.

$$\mathbf{Y=-93.38+9.39X_1-3.763X_2-0.42X_3+196.85X_4}$$

Where,

Y= Removal Efficiency

X_1=pH

X_2=Initial iron content (mg/litre)

X_3=Rate of flow (litre/min through the filter)

X_4= Depth of media (m)

Here Y is dependent variable and X is independent variable.

The R value obtained in regression analysis is 0.9560

Depth calculation

$$\mathbf{Y=-93.38+9.39X_1-3.763X_2-0.42X_3+196.85X_4}$$

Where

Y= Removal Efficiency= 90%

X_1=pH =7.5

X_2=Initial iron content =3mg/l

X_3=Rate of flow=2 L/min

X_4= Depth of media

$$Y=-93.38+9.39X_1-3.763X_2-0.42X_3+196.85X_4$$

$$90=93.38+9.39\times7.5-3.763\times3-0.42\times2+196.85X_4$$

X_4 = 0.63m

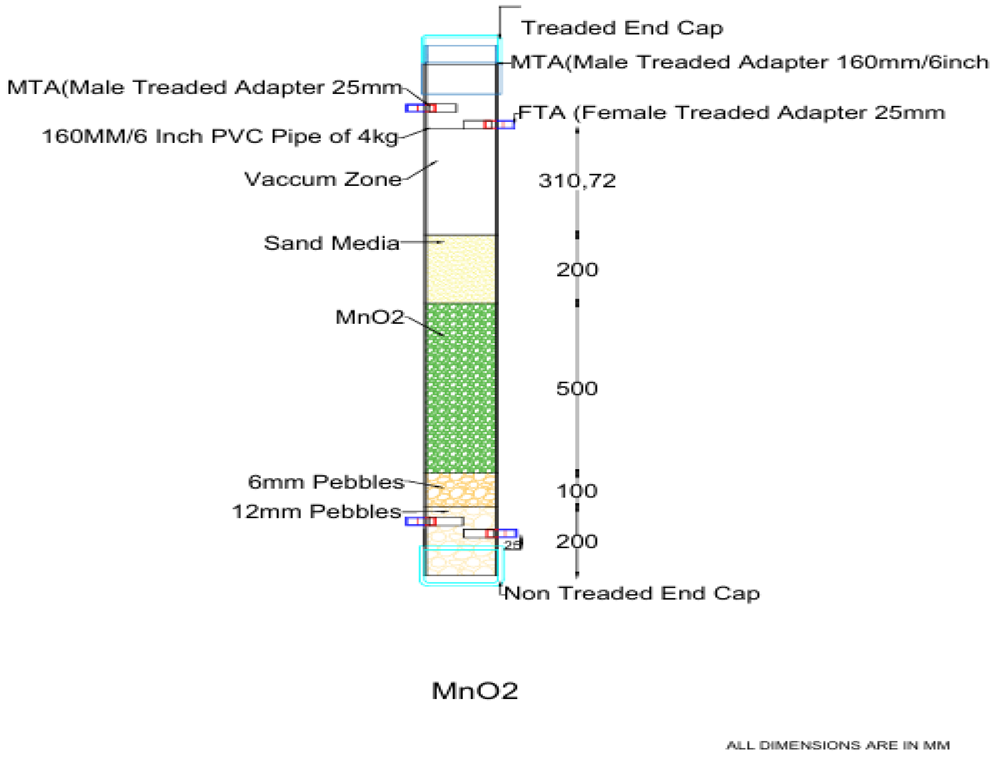


Fig 26 MnO2 Filter

Possible Iron content can be removed for a height of 50cm media

Removal efficiency considering 0.3 mg/litre of iron acceptable limit is taken

$Y=-93.389+9.39X_1-3.76X_2-0.426X_3+196.85X_4$

$(\frac{X2-0.3}{X2})\times100+3.76X_2=-93.389+70.42-0.852+98.42$

Where 0.3 is the acceptable limit of iron

$X_{1=}$ pH = 7.5, $X_{2=}$ Iron content, $X_{3=}$ Rate of flow =2 l/min , $X_{4=}$ Depth of media = 0.63m

$(\frac{X2-0.3}{X2})\times100+3.76X_2=74.54$

$(X_2-0.3)\times100+37.6X_2^2=74.59X_2$

$100X_2-300+37.62X_2^2=74.59X_2$

$37.62X_2^2+25.4X_2-300=0$

Quadratic equation is solved to get the appropriate value of X_2 which is 2.50 mg/L

The maximum depth can be provided is with free board is 0.5m

In 0.5m height the maximum Iron can be removed =2.50mg/L

1 KATALOX – LIGHT FILTER

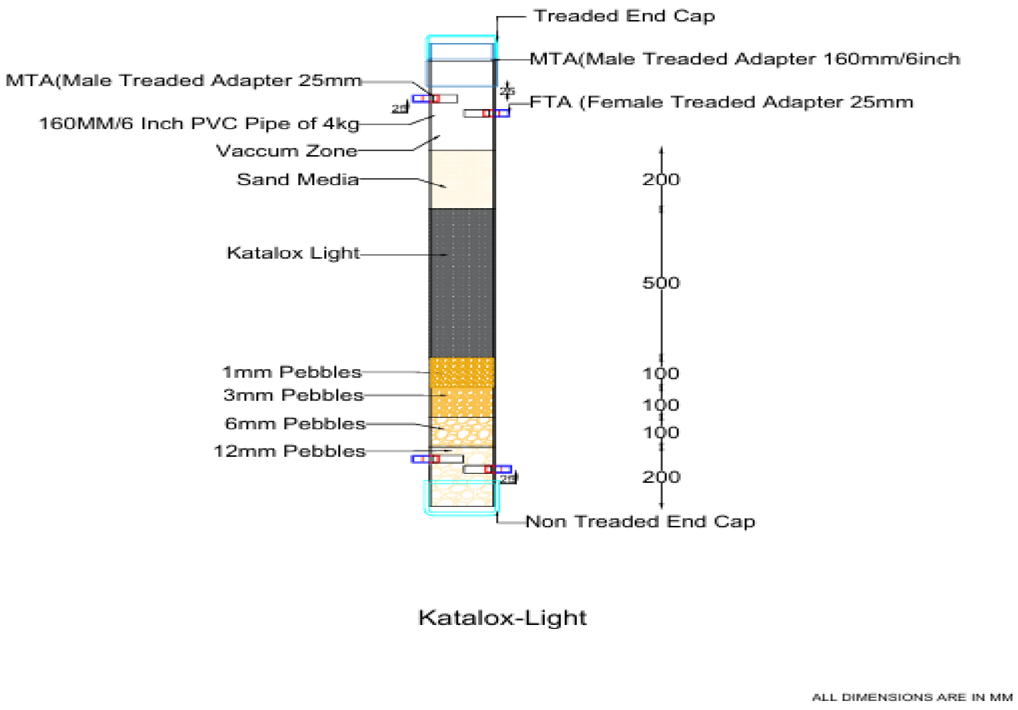


Fig 27 Katalox Filter

The design of depth using regression analysis –

Similarly we can input the values and find the depth of Katalox Light

$$\mathbf{Y=-4.445+6.822X_1-11.595X_2-4.105X_3+185.17X_4}$$

Where,

Y= Removal Efficiency

X_1=pH

X_2=Initial iron content (mg/litre)

X_3=Rate of flow (litres/min through filter)

X_4= Depth of media(m)

Here Y is dependent variable and X is independent variable

The R value obtained in regression analysis is 0.96037

Depth calculation

$\mathbf{Y=-4.445+6.822X_1-11.595X_2-4.105X_3+185.17X_4}$

Where

Y= Removal Efficiency= 90%

X_1=pH =7.5

X_2=Initial iron content =3mg/l

X_3=Rate of flow=2 l/min

X_4= Depth of media

$Y=-4.445+6.822X_1-11.595X_2-4.105X_3+185.17X_4$

$90=-4.445+6.822\times7.5-11.595\times3-4.105\times2+185.17X4$

$X_4 =$ 0.46 m

Possible Iron content can be removed for a height of 50cm media

Removal efficiency considering 0.3 mg/litre of iron acceptable limit

$Y=-4.445+6.822X_1-11.595X_2-4.105X_3+185.17X_4$

$\left(\frac{X2-0.3}{X2}\right)\times100+11.595X_2=-4.445+51.165-8.21+90.551$

Where 0.3 is the acceptable limit of iron

$X_1 =$ pH = 7.5, $X_2 =$ Iron content, $X_3 =$ Rate of flow =2 l/min , $X_4 =$ Depth of media = 0.46m

$\left(\frac{X2-0.3}{X2}\right)\times100+11.595X_2=129.061$

$(X_2-0.3)\times100+115.95X_2^2=129.06X_2$

$100X_2-300+115.95X_2^2=129.06X_2$

$115.95X_2^2+29.061X_2-300=0$

Quadratic equation is solved to get the approximate value of X_2 which is 3.91 mg/L

The maximum depth can be provided is with free board is 0.5m

In 0.5m height the maximum Iron can be removed =3.91mg/L

PUROLITE FILTER

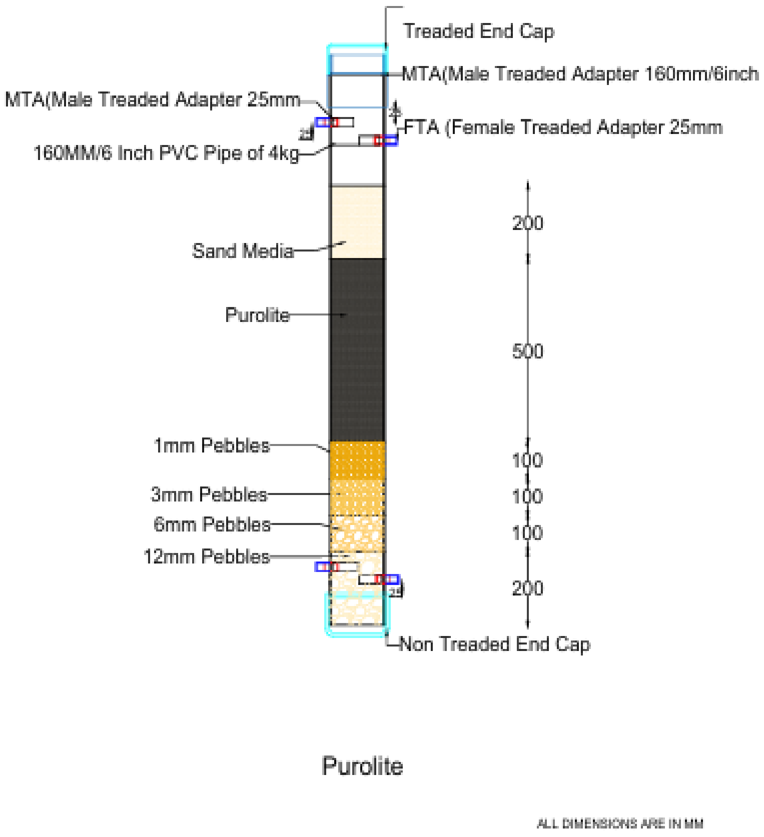


Fig 28 Purolite Filter

The design of depth using regression analysis –

Similarly, we can input the values and find the depth of Purolite

$$Y=10.392+5.773X_1-4.147X_2-4.793X_3+150.492X_4$$

Where,

Y= Removal Efficiency

X_1=pH

X_2=Initial iron content (mg/litre)

X_3=Rate of flow(litres/min through filter)

X_4= Depth of media(m)

Here Y is dependent variable and X is independent variable.

The R value obtained in regression analysis is 0.93559

Depth calculation

$Y=10.392+5.773X_1-4.147X_2-4.793X_3+150.492X_4$

Where

Y= Removal Efficiency= 90%

X_1=pH =7.5

X_2=Initial iron content =3mg/L

X_3=Rate of flow=2 L/min

X_4= Depth of media

$Y=10.392+5.773X_1-4.147X_2-4.793X_3+150.492X_4$

$90=10.392+5.773\times7.5-4.147\times3-4.793\times2+150.492X4$

$X_4 =$ 0.39 m

Possible Iron content can be removed for a height of 50cm media

Removal efficiency considering 0.3 mg/ litre of iron acceptable limit is taken

$Y=10.392+5.773X_1-4.147X_2-4.793X_3+150.492X_4$

$(\frac{X2-0.3}{X2})\times100+4.147X_2=10.392+43.297-9.583+58.691$

Where 0.3 is the acceptable limit of iron

$X_1 =$ pH = 7.5, $X_2 =$ Iron content, $X_3 =$ Rate of flow =2 l/min , $X_4 =$ Depth of media = 0.39m

$(\frac{X2-0.3}{X2})\times100+4.14X_2=102.797$

$(X_2-0.3)\times100+41.47X_2^2=102.79X_2$

$100X_2-300+41.41X_2^2=102.797X_2$

$41.47X_2^2+2.797X_2-300=0$

Quadratic equation is solved to get the approximate value of X_2 which is 5.8 mg/L

The maximum depth can be provided is with free board is 0.5m

In 0.5m height the maximum Iron can be removed =5.8mg/L

7.6. Published books on water related subjects

The Centre published two books namely Jalavum jeevitavum aand

Jalasuraksha nithyajeevithathil with the sole purpose of educating the people on various aspects of water related issues . The book is written in 6 chapters ie introduction. Water pollution, reasons and domestic pollution issues, effects of iron on water quality , wells its construction and maintenance, environmental planning of house and the surroundings and comprises of about 40 pages . The books are being issued free of cost to customers and staff attached with the water testing laboratory and staff of the college

Fig 29 Cover page of book jalavum jeevitavum

JALASURAKSHA NITHYA JEEVITHATIHL

This is another book published in this year . The book is published in association with Unnat Bharath Abhiyan . The book is in online mode and all the customers approaching the lab gets a copy of this book online

Fig 30 Cover page of book jalasuraksha nithyajeevitahathil

7.7 WhatsApp group - messages to the participants

A WhatsApp group was formed Group was formed with the participants who are interested and willing with group name Silpasala -Unnat Bharath Abhiyan and Jyothi Engineering College. The sole purpose of this group is to communicate water quality and sanitation related subjects to the group members so that they can communicate the same to the villagers. Few of such messages are given below for reference. the group comprises of 50 members and good number are from health department ie health inspectors, junior health inspectors and such persons who are in need of relevant information for to fulfilment of the basic objective s. The activities of the whatsap group are appendix as Appendix E

7.8. Water quality awareness competition for final year civil students during 2023-24

Water quality awareness competition for civil final year students. 100 one-word questions were given and based on the mark's prizes were given as follows. The purpose of the competition is to improve the knowledge of students on water issues and last year it was conducted only for civil S8 students. Prize was distributed by Fr. David Nettikkaden, fiancé manager in a function arranged along with PTA meeting.

Table 6 Winners of water quality quiz completion

Sl No	Name	Mark out of 99	Cash prize
1	Seethal Anna Korulla	71	Rs 2500
2	Janet George	63	Rs 1500
3	Gopika P	62	Rs 1000
4	Anjali.M.M	61	Rs 1000
5	Vishnu Vijayan	58	Rs 1000
6	Akshaya Viswanathan	58	Rs 1000
7	Mnau.E.M	56	Rs 1000
8	Pavithra .P.V	55	Rs 1000
9	Aswanth Asokan	52	Rs 1000

Fig 31 Students writing the exam

Fig 32 Seethal Anna Korulla receiving first prize from Fr. David Nettikkadan ,Finance Manger

Water quality competition for 2024-25

Centre for Water Research and Education (CWRE) and Indian Society for Technical Education (ISTE) jointly organize Water quality awareness competition for all the students of Jyothi Engineering College jointly organize water quality awareness Competition for water quality awareness for all students of Jyothi Engineering college Contaminated water and poor sanitation are linked to transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio. Absent, inadequate, or inappropriately managed water and sanitation services expose individuals to preventable health risks. As per UN estimates worldwide unsafe drinking water, sanitation, and hygiene are responsible for the deaths of about 3.5 million people each year. Water quality is a subject of common importance for everybody and it is postulated that creating awareness among the people is of prime importance. CWRE Jyothi Engineering College is a system under the Civil Engineering Department involved with various steps for helping people for remediation of water related issues. For that objective CWRE in association with ISTE is in line to conduct a water quality awareness competition for all students of Jyothi Engineering College. The features of the competition are as follows

1. Separate competition for S8 civil and all other students
2. Cash prize for winners and certificate for all (Cash prize Rs 4000, Rs 3000, Rs 2000) for both groups
3. 100 questions (MCQ) with star questions for tie breaker. No negative marks
4. 50 % of previous year question will be repeated
5. Entrance fee @Rs 50 per each
6. Tentative Date and time for the competition 12.2.2025 at 1.15 pm to 2.00pm
7. For details visit cwre.jecc.ac.in or through link from Jyothi website for materials and other information

8) Last date for registration 5.12.2025 and register through the assigned faculty in the department
9) It is proposed to conduct the completion separately for S8 civil students and others .

Prize s8 civil and other Students

First – cash Rs 4000

Second cash 3000

Third Rs 2000

Certificate for all participants

For all others

Same as above

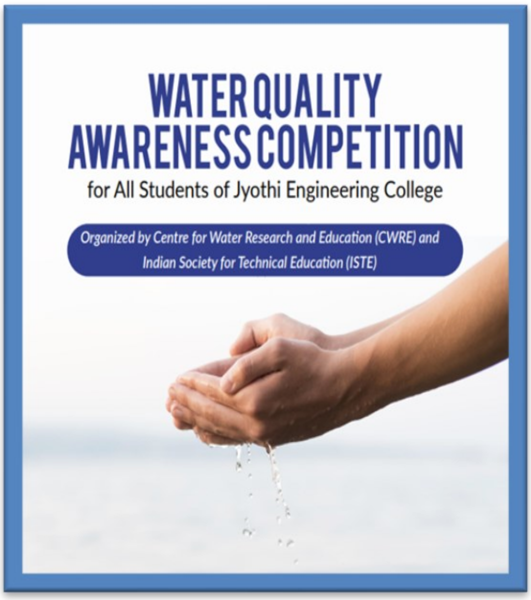
MCQ consisting of 100 questions

50 % questions from previous year

Admission registration Rs 50 per each

Competition for water quality awareness for all students of Jyothi Engineering college

The Centre for Water Research and Education (CWRE), in collaboration with the Indian society for Technical Education (STE) Student, is organizing a water quality awareness competition for all student s of Jyothi Engineering College.



Contaminated water and poor sanitation are linked to the transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid, and polio. Inadequate or improperly managed water and sanitation service expose individuals to preventable health risks. According to UN estimates, unsafe drinking water, sanitation, and hygiene are responsible for approximately 3.5 million deaths worldwide each year. Water quality is a matter of vital importance for everyone, and raising awareness among people is of utmost significance. The CWRE at Jyothi Engineering College, operating under the Civil Engineering Department, actively engages in initiatives to address water the Civil Engineering Department, actively engages in initiatives to address water-related issues and promote remediation strategies.

In pursuit of this objective, CWRE, in association with ISTE, is conducting a water quality awareness competition for all students of Jyothi Engineering college.

Features of the Competition:

- Separate competitions will be held for S8 civil students and all other students.
- Attractive cash prize for winners and participation certificates for all first Prize. ₹ 4,000, Second Prize, ₹3,000, Third Prize: ₹ 2,000 (Prizes will be awarded in both groups)
- The competition will consist of 100 multiple-choice questions (MCQs) with special "Star questions' to resolve tie-breakers. No negative marking will be applied.
- 50% of the questions will be repeated from previous years' questions papers.
- Registration fee ₹50 per participant.
- Tentative date and time: February 12, 2025, from 1: 15 PM to 2.00 PM
- For study materials and additional details, visit cwre.jecc.oc.inor access the link through the Jyothi Engineering College website.
- Last date for registration: February 4, 2005. Participants must registers through the faculty assigned to their respective departments.
- Students are eligible for Activity points (KTU 10).

Table 7 Department coordinators for water quality awareness competition

Sl no	Department	Name of co-ordinators
1	Artificial Intelligence and data science	Anjali
2	Civil	Jeffy Johny
3	Mechatronics	Nini
4	Computer science	Neenu Francis
5	Robotics and automation	Leo Mathew
6	Electrical and Electronics	Dr Shijo P

7	Mechanical	Nice Menacherry
8	Electronics and communication	Saritha
9	First year	Bindu K.S
10	College in charge	Ratnan .P
11	College in charge of ISTE	Drisya .M.K
12	Civil in charge of ISTE	Jisha Akkara
13	Co – Ordinator ,CWRE	M.G.Cyriac

Competition held on 17.1.25

Fig 33 Students writing the exam 24-25

Water Quality Awareness Competition- Declaration of Prizes

Centre for Water Research and Education CWRE and ISTE student chapter announces the prize for the competition. Marks are out of 98

S8 Civil

I st prize -Anjana Chandran – 84 marks

2nd prize – Sreelakshmi K.G – 82 marks (Internal revaluation)

3rd prize – Farzana C.Y - 81 marks

Students other than s8 civil

1st prize -Kuriyan Andrews S4 civil-76 marks

2nd prize -Anagha .C .S4 EC-75 marks

3rd prize -Aneena. O.T S4 CSE – 70 marks (Internal revaluation)

Consolation prize

1. Manju P .M S4 CSE -68 marks
2. Avanthika Ramesh S4 AD – 68 marks

Questions for the examination are appended as Appendix F

7.9 Articles published in the editorial Page of Deepika Daily during last one year relating to water quality and water related subjects

14 articles as listed below Author M.G.Cyriac co-ordinator CWRE.

Deepika Daily Editorial Page

All the articles are intended for awareness creation among the general public. all the journals pertain to the condition in Kerala state and generally appreciated by various people

Table 8 Articles published in the editorial page of Deepika daily

Sl No	Name of article	Date of publication
1	Malinya samskaranathil vittu veezcharuthu	16.5.23
2	Kettidangalum paristhithi thatwangalum	13.10.23
3	Puzha samrakshanam prarampradanam	25.10.23
4	Kudivellam supradanam	1.1.24
5	Malineekaranam palavidam	2.1.24
6	Kudivellathil irumbu	3.1.24
7	Gargika jala samrakshanavum samrakshanavum	4.1.24
8	Veedu nirmanthil sradhikkanere	3.5.24
9	Keralathe engane suchiyakkam	28.5.24
10	Chlorination Nithya jeevithatahil	2.7.24
11	Amayizhanjan oru thakkeethu	19.7.24
12	Suchithvaum samakarakirogangalum	29.7.24
13	Anivaryam E malinya samskararanam	19.8.24
14	Kinar samrakshaanm sradhayode	25.9.24

മാലിന്യ സംസ്കരണത്തിൽ വിട്ടുവീഴ്ചയരുത്

പ്രഫ. എം.ജി. സിറിയക്

Fig 34 Article in Deepika daily dated 16.5.23 on effective waste disposal

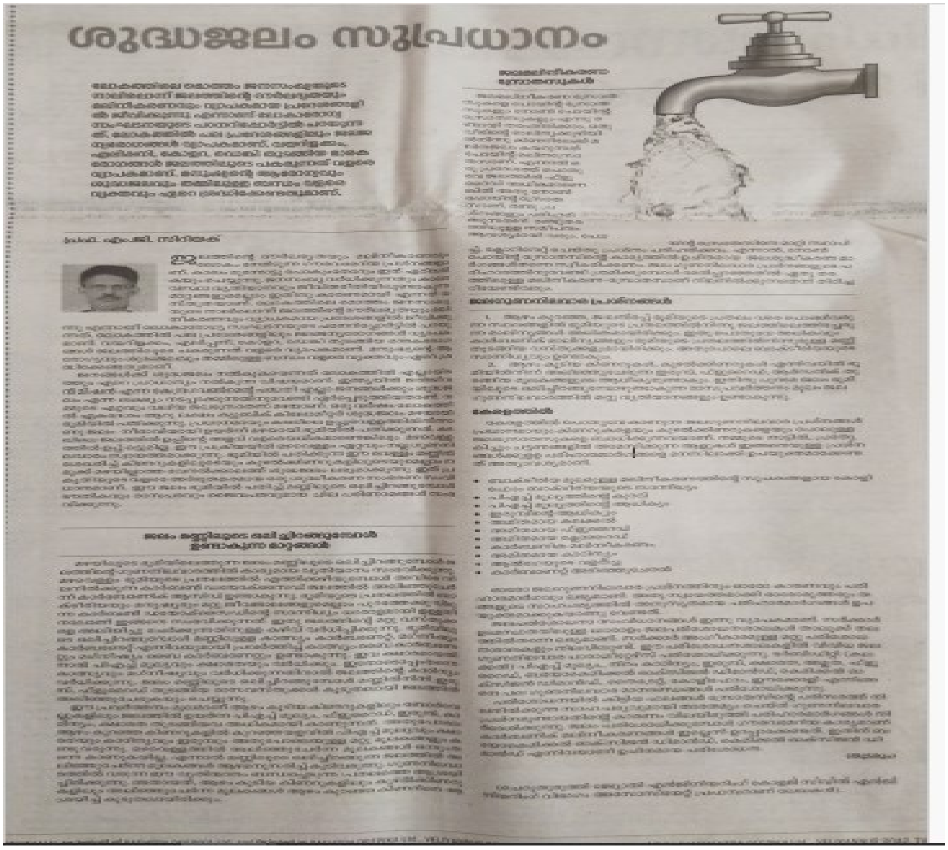
കെട്ടിടങ്ങളും പരിസ്ഥിതി തത്വങ്ങളും

പ്രഫ. എം.ജി. സിറിയക്

Fig 35 Article in Deepika daily dated 13.10.2023 on buildings and environmental issues

പുഴസംരക്ഷണം പരമപ്രധാനം

Fig 36 Article in Deepika daily dated 13.10.2024 on river conservation



ശുദ്ധജലം സുപ്രധാനം

Fig 37 Article in Deepika daily dated 01.01.2024 on safe water

മലിനീകരണം പലവിധം

പ്രൊഫ. എം.ജി. സിറിയക്

ശുദ്ധജലം സുപ്രധാനം-02

Fig 38 article in Deepika daily dated 2.1.24 on different pollution

പ്രഫ. എം.ജി. സിറിയക്

കുടിവെള്ളത്തിൽ ഇരുമ്പ്

ഏറ്റവുമധികം ശല്യമുണ്ടാക്കുന്ന ജലഗുണനിലവാര പ്രശ്നമാണ് ഇരുമ്പിന്റെ ആധിക്യം. കുഴൽക്കിണറിലെ ജലത്തിലാണ് ഇത് കൂടുതലും കണ്ടുവരുന്നത്. ആഴം കൂടുതലുള്ള സാധാരണ കിണറുകളിലും വേനൽക്കാലത്ത് ഈ പ്രശ്നം കാണാറുണ്ട്. ഇതിന് ലളിതമായ പല ശുദ്ധീകരണ മാർഗങ്ങളുണ്ട്.

ശുദ്ധജലം സുപ്രധാനം-03

പ്രശ്നങ്ങൾ

1) ഇരുമ്പു രുചി.
2) പുറത്തെടുത്തുവച്ചു കഴിഞ്ഞാൽ കലക്കൽ വർധിക്കുക.
3) ചായയ്ക്ക് സാധാരണ രുചിയും നിറവും കിട്ടുന്നതിന് കൂടുതൽ പാൽ വേണ്ടി വരിക. ചായയിലുള്ള ടാനിൻ എന്ന കെമിക്കലും ഇരുമ്പും തമ്മിലുള്ള പ്രവർത്തനം മൂലം ജലത്തിന് മഷിനിറമാകുന്നതിനാൽ കൂടുതൽ പാൽ ഒഴിച്ചാലേ നിറവും രുചിയും ലഭിക്കുകയുള്ളൂ.

ഇരുമ്പിന്റെ സ്രോതസ്

മണ്ണിൽ ഏകദേശം ആറു ശതമാനം ഇരുമ്പടങ്ങിയിരിക്കുന്നു. ഇതിൽ ഏകദേശം മൂന്നു ശതമാനം ജലത്തിൽ അലിഞ്ഞുചേരാൻ സാധിക്കുന്ന ഫെറസ് അവസ്ഥയിലും മൂന്നു ശതമാനം ജലത്തിൽ അലിഞ്ഞുചേരാൻ സാധിക്കാത്ത, അവക്ഷിപ്ത രൂപത്തിലുള്ള ഫെറിക് ആയും നിലനിൽക്കുന്നു. മഴവെള്ളം ഭൂമിയിലൂടെ ഒലിച്ചിറങ്ങുമ്പോൾ ഫെറസ് അവസ്ഥയിലുള്ള ഇരുമ്പ് ജലത്തിൽ അലിഞ്ഞുചേരുന്നു. കാർബണിക മലിനീകരണം ജലത്തിൽ ഇരുമ്പ് അലിഞ്ഞു ചേരുന്നതിനുള്ള സാധ്യത വർധിപ്പിക്കും. ഇത് ബാക്ടീരിയയുടെ പ്രവർത്തനത്തിന് അനുകൂലമായ സാഹചര്യം സൃഷ്ടിക്കുകയും കാർബൺ ഡൈ ഓക്സൈഡിന്റെ ഉത്പാദനവും തൻമൂലം ജലത്തിന്റെ അമ്ലതയും വർധിക്കുന്നതിനും കാരണമാകുന്നു. അത് ജലത്തിന്റെ ധാതുലവണങ്ങളെ അലിയിച്ച് ചേർക്കുന്നതിനുള്ള കഴിവ് വർധിപ്പിക്കും. ചില ബാക്ടീരിയകൾ മണ്ണിലുള്ള ഫെറിക് ...

ഇരുമ്പ് മാറ്റുന്നതിനുള്ള വിവിധ മാർഗങ്ങൾ

ഇരുമ്പ് മാറ്റൽ-ബക്കറ്റ് ഉപയോഗിച്ച്

കിണറുകളിൽനിന്ന് ഇരുമ്പ് മാറ്റുന്ന രീതി

ഇരുമ്പ് മാറ്റുന്നതിനു ടാങ്കുകൾ

Fig 39 Article in Deepika daily dated 3.1.24 on iron removal from drinking water

ഗാർഹിക ജലസംരക്ഷണവും ശുദ്ധീകരണവും

ശുദ്ധജലം സുപ്രധാനം-04

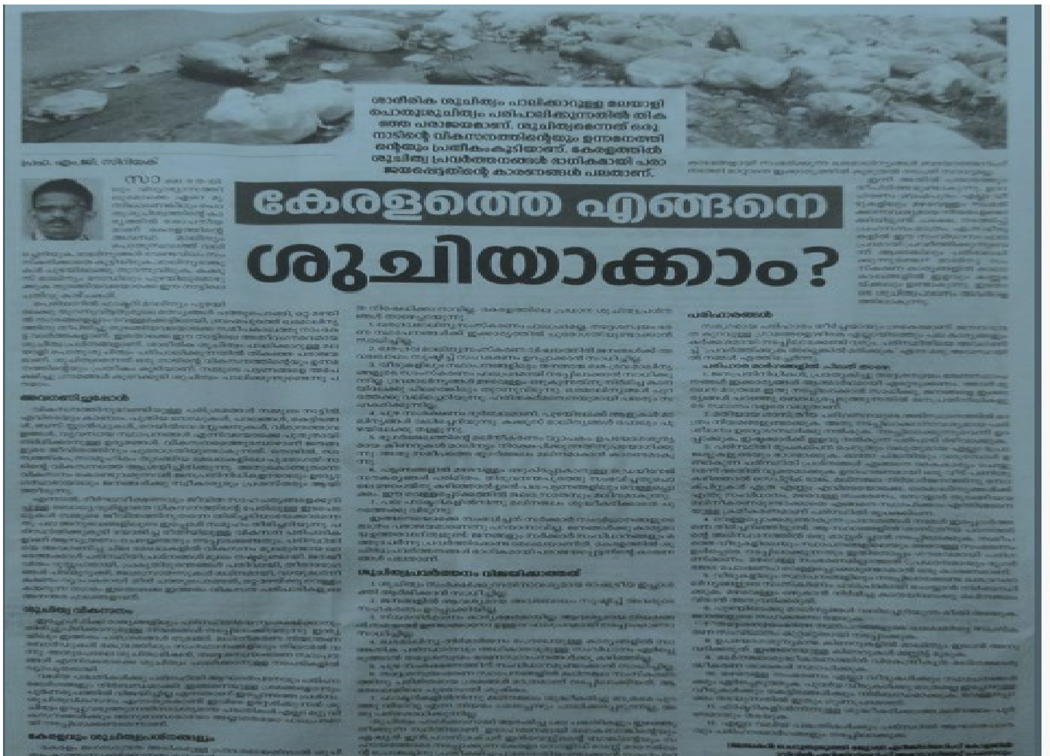
പ്രഫ. എം.ജി. സിറിയക്

Fig 40 Article in Deepika daily dated 4.1.24 on domestic water treatment

വീടുനിർമാണത്തിൽ ശ്രദ്ധിക്കാനേറെ

പ്രഫ. എം.ജി. സിറിയക്

Fig 41 Article in Deepika daily dated 3.5.24 on houses for water safety



ശാരീരിക ശുചിത്വം പാലിക്കാനുള്ള മലയാളി പൊതുശുചിത്വം പരിപാലിക്കുന്നതിൽ തിക ഞ്ഞ പരാജയമാണ്. ശുചിത്വമെന്നത് ഒരു നാടിന്റെ വികസനത്തിന്റെയും ഉന്നമനത്തി ന്റെയും പ്രതീകംകൂടിയാണ്. കേരളത്തിൽ ശുചിത്വ പ്രവർത്തനങ്ങൾ ഭാഗികമായി പരാ ജയപ്പെട്ടതിന്റെ കാരണങ്ങൾ പലതാണ്.

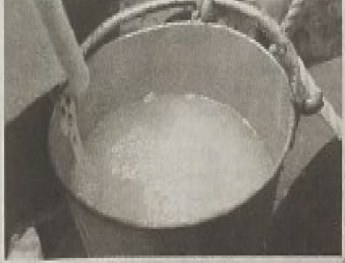
പ്രഫ. എം.ജി. സിറിയക്

കേരളത്തെ എങ്ങനെ ശുചിയാക്കാം?

Fig 42 Article in Deepika daily dated 28.5 .24 on how Kerala can be made clean

ക്ലോറിനേഷൻ നിത്യജീവിതത്തിൽ

പ്രഫ. എം.ജി. സിറിയക്



വെള്ളം ശുദ്ധിയാക്കാൻ അണുനാശീകരണം സുപ്രധാനമാണ്. ക്ലോറിൻ, ഓസോൺ, യുവി കിരണങ്ങൾ, പൊട്ടാസ്യം പെർമാംഗനേറ്റ്, സിൽവർ തുടങ്ങിയവയൊക്കെ അണുനാശീകരണത്തിന് ഉപയോഗിക്കുന്നു. എന്നാൽ, ഇതിൽ ഏറ്റവും കൂടുതൽ ഉപയോഗിക്കുന്നതും പ്രയോഗികമായതും ക്ലോറിനാണ്. ശുദ്ധജലവിതരണ പദ്ധതികളിൽ ക്ലോറിനേഷൻ നിർബന്ധമാണ്. വീട്ടിലും പല കാര്യങ്ങൾക്കും ക്ലോറിൻ ആവശ്യമായി വരും.

ക്ലോറിനേഷന്റെ തുടക്കം

ബ്ലീച്ചിംഗ് പൗഡർ

അവക്ഷിപ്ത ക്ലോറിൻ

ക്ലോറിൻ ഡിമാൻഡ്

സൂപ്പർ ക്ലോറിനേഷൻ

കിണറുകളിലെ ക്ലോറിനേഷൻ

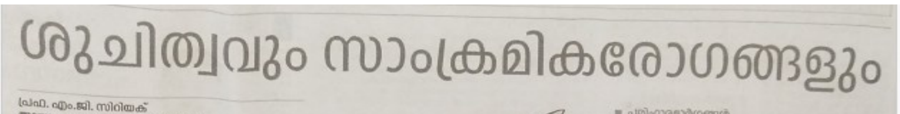
(ലേഖകൻ ചെറുതുരുത്തി ജ്യോതി എൻജിനീയറിംഗ് കോളജിലെ സിവിൽ എൻജിനീയറിംഗ് അസോ. പ്രഫസറും വാട്ടർ അതോറിറ്റി മുൻ എക്സിക്യൂട്ടീവ് എൻജിനീയറുമാണ്.)

Fig 43 article in Deepika daily dated 2.7..24 on chlorination in normal life

‘ആമയിഴഞ്ചാൻ’ ഒരു താക്കീത്

പ്രഫ. എം.ജി. സിറിയക്

Fig 44 article in Deepika daily dated 19.7..24 on warnings of amayizhanjan – problem connected with Trivandrum railway waste water



ശുചിത്വവും സാംക്രമികരോഗങ്ങളും

പ്രഫ. എം.ജി. സിറിയക്

Fig 45 article in Deepika daily dated 29.7..24 clean life for safe life

അനിവാര്യം, ഇ-മാലിന്യ സംസ്കരണം

പ്രഫ. എം.ജി. സിറിയക്

എന്താണ് ഇ- മാലിന്യം?

പരിസ്ഥിതി ആഘാതം

ഇ-വേസ്റ്റ് മാനേജ്മെന്റ് നിയമങ്ങൾ

സംസ്കരണം: വിവിധ ഘട്ടങ്ങൾ

പരിഹാരങ്ങൾ കേരളത്തിൽ

നിർമാതാവിന്റെ ഉത്തരവാദിത്വം

Fig 46 Article in Deepika daily dated 19.8..24 one waste treatment

കിണർ സംരക്ഷണം ശ്രദ്ധയോടെ

പ്രഫ. എം.ജി. സിറിയക്

മലിനജല സംസ്കരണം

Fig 47 Aarticle in Deepika daily dated 25.9.24 on importance of well protection

7.10. Commercial Equipment For Water Treatment

In commercial methods different types filtering models are used for the filtration process. These filtering models are mainly produced by different companies. The topmost companies which produces the filters are:

KENT

HAVELLS MAX

LIVPURE

BLUE STAR

AQUAGUARD

PUREIT

AO SMITH

WATER DOCTOR- and so many

Various equipment are

Softeners

RO filters (Reverse osmosis) filters

Sand filter

Activated carbon filter

And many other equipment

Demineralization

Simple filter and so many equipment

Table 9 Various filter media used are

Sl No	Name of materials
1	Katalox
2	Purolite
3	Manganese dioxide
4	Activated carbon
5	Resin for RO
6	Demineralization media
7	Silex large
8	Silex small
9	Sand large
10	Sand small
11	Pigmy filter

Ordinary filter
Sand, activated carbon etc   Ro filter

Fig 48 Water Filters

7.11 Water quality reports to various organizations

Water quality reports were given to various organization on demand. the result generally illustrates various aspects. it is a free service to the people who have their water samples in the lab. Following are organization for which we have given the report

- NARIP Cheruthuuthy
- Pollution of well -Propsal for remedy -R.C church Cheruthuruthy
- Inspection Report of Water Sources in GUPS Painkulam
- Proposal given to MOEF for proposal for policy amendment of govt of India
- The details are appended as appendix G

7.12 One day interactive workshop for pushparaj Associates, Shornur

Dated 17.1.2025

Conducted a one day interactive workshop to the organizations and the details are appended as appendix H

7.13 Water Quality Training Proposal for General Public

We have proposed a training package for all people with an interval of 1 day. the brochure for the same is given below

Fig 49 Proposal for water quality training for general Public

8. Appreciation and Recognitions

CWRE is few among such water institutes in the state which is involved such type of social activities . The govt of Kerala has given appreciation for conducting study on the pollution of on Barathapuzha. On account of efficient service to the people we receive appreciation from people by various means. Appreciation from the government and various individuals are furnished here

Government of Kerala
WATER RESOURCES DEPARTMENT

CERTIFICATE
of Appreciation

Issued to **Prof. CYRIAC MG, ASSOCIATE PROFESSOR, JYOTHI ENGINEERING COLLEGE, THRISSUR** under APJAKTU in recognition of his outstanding contribution by associating with Water Resources Department during November 2020 to February 2021 and successfully completing the FIELD STUDIES, WATER SAMPLE COLLECTION & ANALYSIS in the designated stretch of River Bharathapuzha in connection with the "PREPARATION OF DPR FOR ABATEMENT OF POLLUTION & REJUVENATION OF 21 RIVERS IN KERALA".

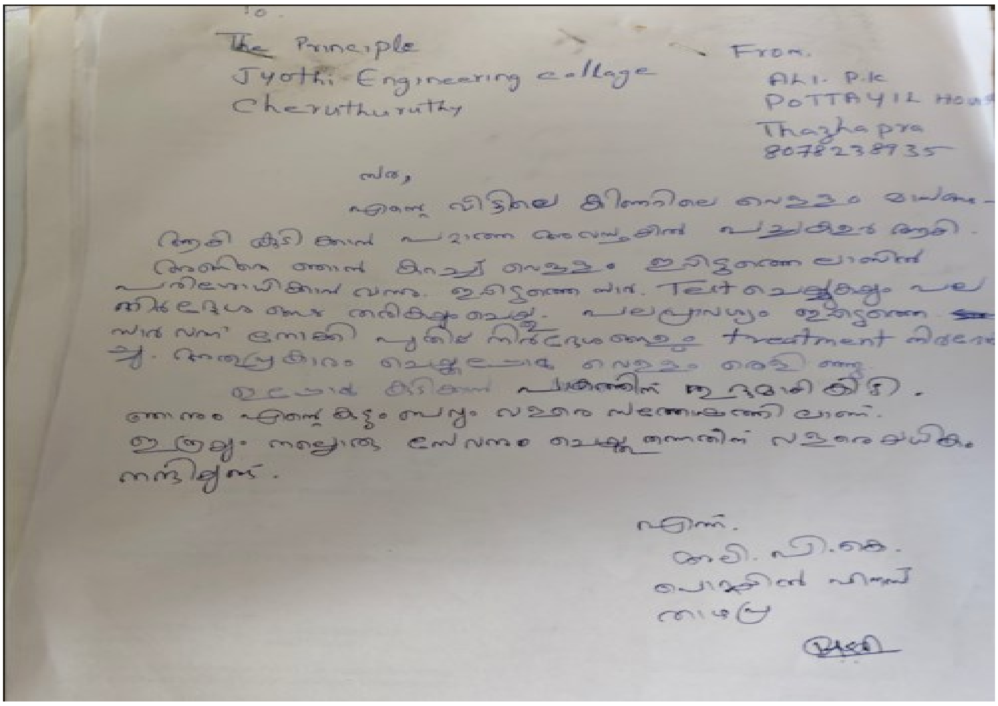
His involvement in the project and dedication towards the work are commendable and praiseworthy.

28.02.2021
Thiruvananthapuram

T.K.JOSE IAS
Additional Chief Secretary,
Water Resources Department

Fig 50 Appreciation by Additonal Chief Secretary Government of Kerala

Similar appreciations by general public are given below



To
The Principle
Jyothi Engineering college
Cheruthuruthy

From
Ali. P.K
POTTAYIL House
Thazhapra
8078238935

Appreciation from Ali P.K Thazhapra

ജ്യോതി എഞ്ചിനീയറിംഗ് കോളേജിൽ പ്രവർത്തിക്കുന്ന CWRE സ്റ്റാഫിനുവേണ്ടി ജലവുമായി സംബന്ധിക്കുന്ന ഏകദിന ശില്പശാല നടത്തിയിരുന്നു. ജലവുമായി സംബന്ധിക്കുന്ന എന്തു സംശയങ്ങൾക്കും CWRE-യുമായി ബന്ധപ്പെടാറുണ്ട്. സംശയങ്ങൾക്ക് പെട്ടെന്ന് തന്നെ ഉചിതമായ മറുപടി ലഭിക്കാറുണ്ട്. ദേശമംഗലം ഗ്രാമപഞ്ചായത്തിലെ 15-20 വാർഡിൽ മഞ്ഞപ്പിത്തം വ്യാപിച്ച സാഹചര്യത്തിൽ സമീപ പ്രദേശത്തെ വീടുകളിലെ കിണറുകളിലെ വെള്ളം പരിശോധിച്ചിരുന്നത് CWRE-യിൽ ആയിരുന്നു. പരിശോധനാഫലം പെട്ടെന്നു തന്നെ ലഭ്യമാവുകയും ചെയ്തു. CWRE-യുടെ എല്ലാ സേവനങ്ങളും തൃപ്തികരമാണ്.

എന്ന്,

ചിഞ്ചു രാജ്.
ജെ.എച്ച്.ഐ
കുടുംബാരോഗ്യകേന്ദ്രം,
ദേശമംഗലം
Ph: 8086852627

Appreciation from Chinjuraj JHI Health department

[illegible]

കെ.വി. ജയപാലൻ
കൊവ്വൽപള്ളി,
കാഞ്ഞങ്ങാട് സൗത്ത്-671531
MOB 9446565575.

Appreciation from K.V.Jayapalan ,Kasaragod

P K Kurian

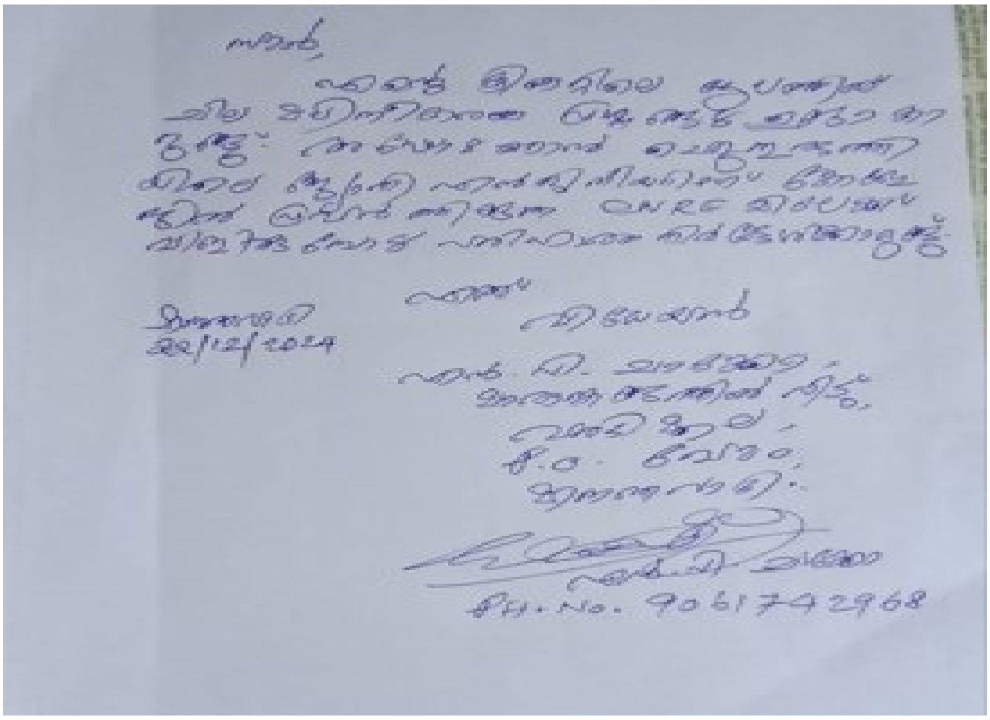
Panamthanam House
Punnakunnu Post
Vellarikund Via
Kasaragod District
PIN – 671534, Kerala
Mobile-9447512787
pkkurian48@gmail.com

Certificate of Appreciation

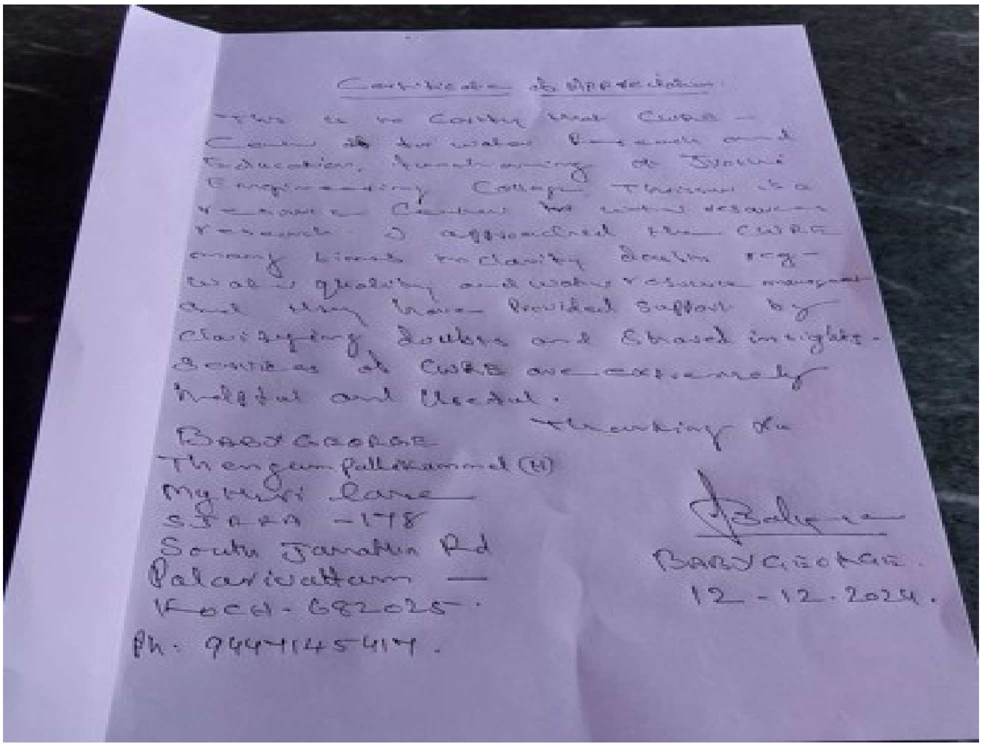
This is to certify that CWRE- Centre for Water Research and Education, functioning at Jyothi Engineering College, Thrissur is a resource centre in water resources research. I have approached the CWRE many times to clarify doubts regarding water quality and water resource management and they have provided support by clarifying doubts and shared insights. Services of CWRE are extremely helpful and useful.

P K Kurian
21.12.2024

Appreciation by Sr P.K Kurian ,Kasaragod


CWRE
22/12/2024
Ph. No. 9061742968

Appreciation from N.P Chacko . Manathavady



Certificate of Appreciation

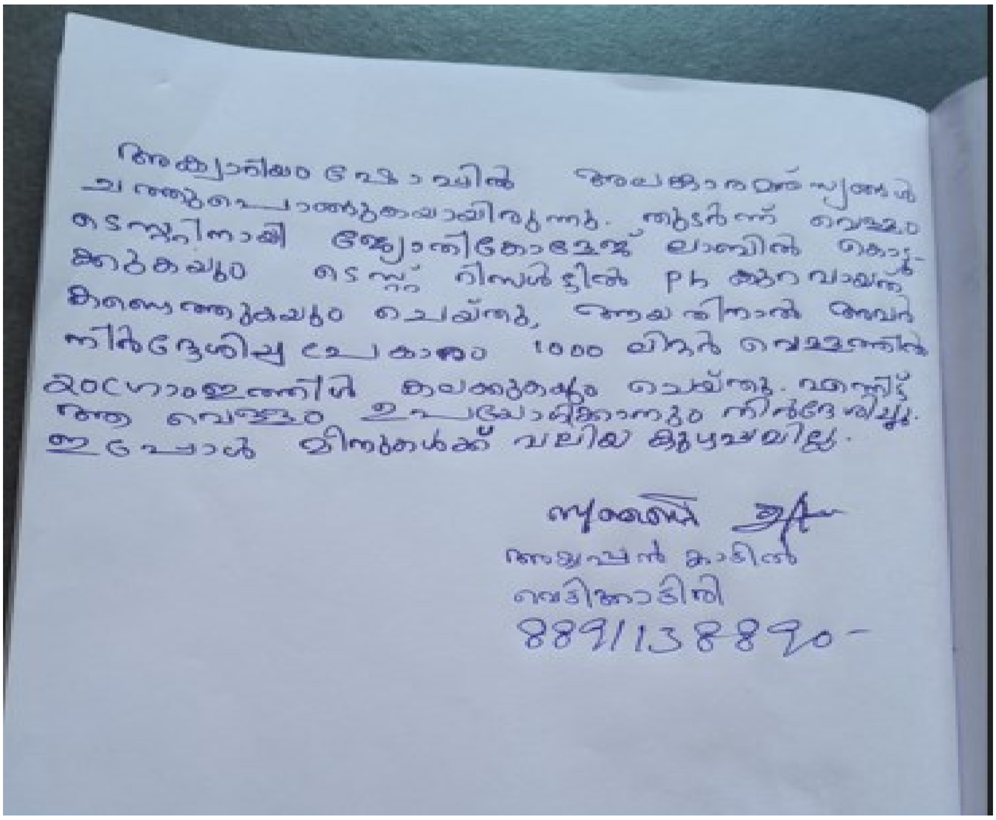
This is to certify that CWRE – Centre for Water Research and Education, functioning at Jyothi Engineering College, [illegible] is a renowned Centre for water resource research. I approached the CWRE many times to clarify doubts reg– water quality and water resource management and they have provided support by clarifying doubts and shared insights. Services of CWRE are extremely helpful and useful.

Thanking you

BABY GEORGE
Thengumpallikkunnel (H)
Mythri Lane
SJRRA – 178
South Janatha Rd
Palarivattam –
KOCHI – 682025.
Ph: 9441145417.

Baby George
BABY GEORGE.
12 - 12 - 2024.

Appreciation from Baby George Ernakulam



[illegible]

വെട്ടിക്കാട്ടിരി
8891138890

Appreciation from Subair Vettikkattiri

9. Conclusion

CWRE is a system developed and nurtured for the benefit of people especially for those who are relying on domestic water sources for their day today water requirement. It has developed its mode of operation for accomplishing the above-mentioned objectives. The system works on a no profit no loss basis and we are trying our level best to benefit the customers. Apart from testing of water. inspection of water sources to identify the level of contamination is a successful procedure and people encourage it significantly. It helps to identify causes of domestic pollution and these actvites are progressing steadily in a systematic way. We also take up all the activities like publishing book, artcles in news papers connected with providing assistance for conceiving safe and pure water for all. condcting training programs for govermnet and private organizations, telephonic conversation etc. All those activites are fruitful and generally the people are benefitted and often they express happiness and satisfaction. The purpose of this report is to hight light all such activities so that it is a model for others

LIST OF APPENDICES

Appendices	Name
A	Up to Date Details about Analysis of Water Quality
B	Research Findings for Water Quality issues in Kerala State and Remedial Measure
C	One day awareness on water conservation was conducted on1.6.2019 Unnat Bharath Abhiyan activities
D	One day Awareness programme on 22.08 2023
E	Whats App group -weekly messages to the participants
F	Question paper for water quality awareness competition
G	Reports for remedial measures to various organozations on water quality
H	One day interactive workshop for pushparaj Associates ,Shornur Dated 17.1.2025

Appendix A

Up to Date Details of Water Quality analysis

Year : 2016 – 2017				
Sl.No.	**Date**	**Name of Faculty**	**Amount of Payment**	**Total**
1.	04.11.2016	Cyriac. M G	195.00	
2.	13.12.2016	Cyriac. M G	195.00	
3.	23.01.2017	Cyriac. M G	225.00	
4.	02.02.2017	Cyriac. M G	305.00	
5.	22.02.2017	Cyriac. M G	261.00	
6.	03.10.2017	Cyriac. M G	195.00	
7.	27.03.2017	Cyriac. M G	345.00	
8.	29.03.2017	Cyriac. M G	345.00	
9.	04.01.2017	Cyriac. M G	195.00	
10.	04.10.2017	Cyriac. M G	297.00	
		Total- 10 Samples 2	**2558.00**	

Year : 2017 – 2018				
Sl.No.	**Date**	**Name of Faculty**	**Amount of Payment**	**Total**
1.	27.04.2017	Cyriac. M G	267.00	
2.	05-06-2017	Cyriac. M G	219.00	
3.	23-06-2017	Cyriac. M G	201.00	
4.	07.10.2017	Cyriac. M G	207.00	
5.	15.09.2017	Cyriac. M G	279.00	
6.	11.06.2017	Cyriac. M G	309.00	
7.	11.09.2017	Cyriac. M G	309.00	
8.	10.11.2017	Cyriac. M G	201.00	
9.	30.11.2017	Cyriac. M G	237.00	
10.	19.12.2017	Cyriac. M G	620.00	
11.	02.09.2018	Cyriac. M G	465.00	
12.	02.12.2018	Cyriac. M G	280.00	
13.	19.02.2018	Cyriac. M G	620.00	

14.	19.02.2018	Cyriac. M G	620.00	
15.	03.03.2018	Cyriac. M G	515.00	
16.	03.12.2018	Cyriac. M G	685.00	
17.	13.03.2018	Cyriac. M G	620.00	
		Total- 10 Samples 17	**6654.00**	

Year : 2018 – 2019				
Sl. No.	**Date**	**Name of Faculty**	**Amount of Payment**	**Total**
1.	03.04.2018	Shana Kodakkadu	620.00	
2.	06.04.2018	Jasser, Pallam	330.00	
3.	12.04.2018	Achuthankutty, Cheruthurthy	620.00	
4.	12.04.2018	Achuthankutty, Cheruthurthy	620.00	
5.	12.04.2018	Tomy Anto	265.00	
6.	18.04.2018	Sreenivasan K A	620.00	
7.	09.05.2018	John P T	440.00	
8.	16.05.2018	Sharafudeen	620.00	
9.	16.05.2018	Sharafudeen	620.00	
10.	29.05.2018	Madhu Hotel Srikallissery	620.00	
11.	30.05.2018	Govt. H S Cheruthuruthy	620.00	
12.	29.05.2018	Govt. LPS Cheruthruthy	620.00	
13.	29.05.2018	Aups Pallikkal	620.00	
14.	29.05.2018	Sntti - Cheruthuruthy	620.00	
15.	06.06.2018	Ramachandran Nair	620.00	
16.	19.06.2018	GMBSNL	500.00	
17.	26.06.2018	Sulaiman K M Kunnathupeedikayil	620.00	
18.	25.06.2018	Jayan K K Amma bakery Cheru.	620.00	
19.	25.06.2018	Madhan Mohan Cheruthuruthy	620.00	
20.	25.06.2018	Nethaji Memorial English School	620.00	
21.	25.06.2018	Biju K W A A E	500.00	
22.	25.06.2018	Lakshmi Divakaran, Staff	420.00	
23.	05.07.2018	Raveedran, Thonoorkara	400.00	
24.	09.07.2018	Mohammed Cheruthuruthy	620.00	
25.	09.07.2018	Dinesh, Shornur	380.00	
26.	17.07.2018	Abdul Majjed, Cheruthuruthy	620.00	

27.	25.07.2018	Manu Musiliyar, Islamiv Center, Pallam	620.00	
28.	06.08.2018	Ibrahim, Panniyadi	620.00	
29.	25.07.2018	Anju M J	380.00	
30.	06.08.2018	Lt Col. Jacob E D	380.00	
31.	06.08.2018	Sahadevan	620.00	
32.	03.09.2018	Mathew	465.00	
33.	04.09.2018	MM Auditorium	732.00	
34.	04.09.2018	Fr. Ajeesh	940.00	
35.	07.09.2018	Fr. Ajeesh	470.00	
36.	07.09.2018	Roshni Rajan	470.00	
37.	14.09.2018	Gini	295.00	
38.	14.09.2018	Anitha	295.00	
39.	14.09.2018	Gaffur	810.00	
40.	14.09.2018	Pathumakutty	323.00	
41.	17.09.2018	Aishakutty	335.00	
42.	24.09.2018	Narayana Menon	440.00	
43.	01.10.2018	Nice Menachery	490.00	
44.	01.10.2018	Muthalif	440.00	
45.	15.10.2018	Remesh Kumar K B	500.00	
46.	15.10.2018	Joseph K J	250.00	
47.	31.10.2018	Bency Joy	520.00	
48.	01.11.2018	Chagya Lakshmi	390.00	
49.	25.11.2018	Shiny Shajan	390.00	
50.	22.11.2018	Shiny Shajan	320.00	
51.	26.11.2018	Goury Das	390.00	
52.	28.11.2018	Prasob	390.00	
53.	28.11.2018	Asharaf	820.00	
54.	28.11.2018	Muthalif	660.00	
55.	05.12.2018	Bineesh M	400.00	
56.	18.12.2018	Xaviar	400.00	
57.	19.12.2018	Sree Durgha English School	820.00	
58.	04.02.2019	Velayudhan K T	370.00	
59.	06.02.2019	City Cool Bar	800.00	
60.	06.02.2019	Unnikrishnan	385.00	
61.	19.02.2019	Sahadevan	870.00	
62.	11.03.2019	Ramla	440.00	

63.	12.03.2019	Mamma Food	250.00	
64.	15.03.2019	Joseph K J	250.00	
65.	15.03.2019	Godwin Anto	820.00	
66.	15.03.2019	Rajan K K	300.00	
67.	23.03.2019	Madhu	300.00	
68.	26.03.2019	Vavachan Joseph	1070.00	
		Total- 10 Samples 17	**35975.00**	

Year : 2019 – 2020			
Sl.No.	**Date**	**Funding Agency**	**Amount**
1	4-.04 2019	noorul hudha orphanage	820
2	10.04 .2019	Ramakrishnan , cheruthuruthy	366
3	11.04.19	Divya M.mEnon	500
4	11.4.2019	Ramachandran CR,Mulurkara	366
5	13.04 .2019	Girishkumar ,Cheruthurty	180
6	2.05 .2019	Abdul razak ,Cheruthurty	820
7	6.05.2019	Abdul khafder ,Pallam	500
8	8.05.2019	Malabar engg college	520
9	15.05,2019	Balakrishnan , Kudumbini	820
10	15.05.2019	Ravikumar ,Cheruthurty	820
11	15.05 .2019	Taluk hospoital chelkkara	820
12	20.05.2019	Bhagayalakshmi ,Cheruthuruthy	615
13	20.05.2019	Amma bakery ,cheruthruty	820
14	20.05 .2019	Jayan co amma bakerry	820
15	3.06.2019	AUPS Pallichal , Palllam	870
16	11.06.2019	Mahatma hotel ,Chruthurty	870
17	11.06.2019	Achudankutty, Cheruthuruthy	820
18	15.06.2019	Subin ,Thushara ,Shornur	820
19	18.06.2019	KeralaKalamandalm , cheruthuryh	820
20	25.06.2019	sree padmanabha hotel chunkam	820
21	28.06 2019	M.R .Hotel vettikkattiri	820
22	01-07-2019	Seenia Francis (Staff CSE)	320

23	02-07-2019	Yusaf, Cheruthuruthy	820
24	02-07-2019	Yusaf, Cheruthuruthy	870
25	04-07-2019	Sasikumar, Cheruthuruthy	820
26	23-07-2019	Sunny,Rosevally, Panjal (3samples)	1305
27	25-07-2019	Primary Health Centre, Panjal	615
28	25-07-2019	Binoy Thomas, Maippadam,Chelakkara	820
29	25-07-2019	Reshmi K R, Killimangalam	615
30	06-08-2019	Abdul Khadar, Pallam	520
31	08-08-2019	Saritha P (Staff EEE)	385
32	20-08-2019	Beena Unnikrishnan,	295
33	24-09-2019	Thankachan	390
34	28-09-2019	Madhavan, Killimanagalam	820
35	28-09-2019	Hotel JBR, Cheruthuruthy	820
36	03-10-2019	British Bakers, Chungath	820
37	17-10-2019	Ummar, Tharavadu FamilyRestaurant, Wadakkanchery	820
38	17-10-2019	Bhagyalakshmi, Cheruthuruthy	820
39	22-10-2019	Samadh, Pangarappally	820
40	28-10-2019	T K Sidhique, Cheruthuruthy	400
41	28-10-2019	Dr. Vineeth, (Staff CSE)	531
42	01-11-2019	Mujeeb Panikkaveettil,Cheruthuruthy	820
43	02-11-2019	Muhammedkutty, Cheruthuruthy	620
44	20-11-2019	Unnikrishnan, Lakshmi Nivas,Shornur	520
45	22-11-2019	Rasheed M F, Vazhakkode	520
46	27-11-2019	Rajesh Knnath, Nedumpura	620
47	06-12-2019	Sudha Sankar, Pradeeksha,Kulappilly	820
48	07-12-2019	Akhil Balakrishanan (Staff EEE)	350
49	10-12-2019	Ibrahim Kothamparakkal,Cheruthuruthy	390
50	12-12-2019	Navaz, Padijarekkunnath,Nedumpura	615
51	20-01-2020	Ayyappan, Mullurkkara	840
52	25-01-2020	Lakshmanan, Paynkulam	325
53	31-01-2020	Origin Products, Mullurkkara	820

54	05-02-2020	Vavachan Joseph, Thiruviluamala	820
55	14-02-2020	Ramakrishnan, Global Soda	820
56	14-02-2020	Asharaf, PP Store	250
57	14-02-2020	Ravi, Athikkal, Vettikkatiri	250
58	17-02-2020	City Cool Bar, Cheruthuruthy	820
59	19-02-2020	Sajin K B, Royal Foods, Cheruthuruthy	820
60	19-02-2020	New Regal Bakery, Shornur	820
61	25-02-2020	Hotel Friends, Vettikkattiry	820
62	25-02-2020	Nouphal, Padinjarekkunnathu, Cheruthuruthy	620
63	25-02-2020	Azees, Padinjarekkunnathu, Vettikkattiry	620
64	26-02-2020	Abdulla Mulakkal	620
65	26-02-2020	Shahur, City Light Coffee	825
66	02-03-2020	Vineeth, Shornur	400
67	04-03-2020	Hanuman, Panjal	525
68	04-03-2020	Gopalakrishnan, Panjal	525
69	06-03-2020	River Retreat, Shornur	825
70	05-03-2020	Muhammedkutty, Vettikkattiry	620
71	07-03-2020	Achudankutty, Cheruthuruthy	620
72	07-03-2020	Rajan K K, Kulirma, Erumappety	820
73	11-03-2020	Bhaji Joseph (Office Staff)	390
74	17-03-2020	Sunil Kumar, Killimanagalam	820
75	18-03-2020	Abhilash, Cheroor	250
76	18-03-2020	Manikandan, Killimangalam	803
		No of samples 76	**50216**

Year : 2020 – 2021			
Sl. No	**Date**	**Funding Agency**	**Amount**
1	27.05.2020	Vincy Varghese (staff CE)	320
2	1.06.2020	Ajukumar, Puthussery	820
3	1.06.2020	Latheef , Ottappalam	525
4	3.06.2020	Bindu Ravi, Cheruthuruthy	660
5	08.06.2020	Ramanarayanan, Atur	820
6	08.06.2020	Abdul Nazar, Velathoor	820
7	29.06.2020	Saleem, Cheruthuruthy	820
8	21.07.2020	manzoor oliyill	820
9	22.07.2020	Daughter of our ladyconvent	500
10	10.08.2020	Hareesh.M	820
11	11.08.2020	Arafa English school, Attoor2nos	1690
12	18.08.2020	Mujeb Pulickaveetil,Attoor	525
13	24.08.2020	Rajesh pallickaparambil	820
14	28.09.2020	Ameer.V.K,Vattaparambil,Pallam	820
15	28.09.2020	Manoj Edassery Atoor	820
16	22.10.2020	Aswathy rajan staff	390
17	12.11.2020	Amrutha vidyalayam	820
18	17.11.2020	Aames food products painkulam	820
19	17.11,2020	Ali .K,Kinattumkal house	250
20	8.12.2020	K.sharafudeen	330
21	29.12.20	Victor manjilla ,Kainoor	250
22	29.12..2020	Radhaktishnan, Pullazhi, Olari	350
23	5.012.2021	Kumaran, Kiliamprambil.painkulam	420
24	5.01.2021	Vavachan Joseph. Kalampattil	870
25	13.01.2021	Al irshad school 3nos	2560
26	20.1.2021	Sandeep chandrasekhar	580
27	20.01 2021	Mohammed .K.H panjal	390
28	22.01.2021	Sreekanth ,shornur	700

29	27.01 .2021	Vinid ,chelakkara	560
30	29.01.2021	Suhara, Cheruthurty	390
31	29.01.2021	Azar,Chelakkra	870
32	28.01.2021	St. Joseph Church Pangarappally	360
33	2.2.2021	Hamsa K.K	820
34	11.2.2021	K abdu majeed	870
35	11.2.2021	Sharath sathyan,shornur	250
36	12345 12.2.2021	Shafeek cheruthurthy - 2nos	1640
37	16.02.2021	C.K Raveendran-2nos	825
38	17.02 2021	K.V .Satheesan	300
39	18.02.2021	Radhakrishnan KS.TCR	390
40	20.2.2021	Suhara ,shornur	870
41	21.02.2021	Dr Shijoh staff	300
42	24.02.2021	Vidhu , chelakkara	750
43	24.02.2021	Unnikrishnan	300
44	2.3.2021	Sardar, cheruthurty	375
45	16.03.21	Hareesh	870
46	17.3.21	Ashique	280
47	19.03.21	Anju	390
48	21.03.2021	Shaicy	240
49	22.03.21	Shafeeque	400
		Amount	**Rs 32380**

Year : 2021 – 2022			
Sl. No	**Date**	**Funding Agency**	**Amount**
1	7.42021	Hassan B,A	250
2	19.4.2021	Abdul Saleem	820
3	19.04.2021	Fr Anson	200
4	22.7.2021	Shajan .M.K	390
5	12.08.2021	Anto Mathew	870

6	08.08.2021	Fariz VA	390
7	17.08.2021	Joseph .V.K	390
8	7.9.21	Jacob .KA	520
9	8.-09.2021	Mahajubilee training College	00
10	13.09.2021	Santhosh kumar	283
11	14.09.2021	Suresh.K.K	390
12	22.09.2021	Shameer	820
13	24.09.2021	Shazaib shamzi	870
14	30.09.2021	Abdul azeez	820
15	24.09.2021	Mahajubilee training College	00
16	25.10.2021	Muhammed shaheer	820
17	25.10.2021	Arafa English school	820
18	25.10.2021	Arafa English school	870
19	26.10..2021	Muhammed Rafeeq	820
20	28.10.2021	Medical Officer Killimamgalam	650
21	28.10.21	Manzoor .P.K	820
22	23.10.2021	CHSC,Thiruvillamala	820
23	28.10.2021	Ashok kumar	820
24	29.10.2021	FHC Killimangalam	650
25	29.10.2021	Muhammed rafeeq	820
26	17.11.2021	Secretay jalapoyasangam Thiruvillamala	820
27	18.11.2021	Sunil Kumar ,Shornur	280
28	18.11..2021	Dinesh staff	200
29	29.11.2021	Govt Polytechic Chelakkara	820
30	20.12..2021	Hotel River Retreat	820
31	17.12.2021	Medical officer Kuthampully	820
32	20.12.2021	Usman	480
33	20.12..21	Amuse catering	870
34	2.02..22	Abdulla ,Panjal	336
35	2.02.22	Manikandan	336
36	3.02.22	Medical officer Kuthambully	870

37	4.02.22	Lawrence	296
38	9.2.22	Nila buds	650
39	10.2.22	Vineeth P.N	650
40	14.02.22	Justin Jose	500
41	16.02.22	Ambujakshi	500
42	16.02.22	Archana Ice Factory	870
43	16.02.22	Nidhin staff	350
44	21.02.22	Shameer C,H	360
45	21.02.22	Asique .P.V	870
46	3.3.22	Shahul Hameed	870
47	4.3.22	Balakrishnan	580
48	7.3.22	Hareesh .N	870
49	7.3.22	Hussain	870
50	9.3.22	Lijo T.I	390
51	15.3.22	Saithalavi	340
52	17.03.22	Hamza	650
53	17.03.22	Porject office HNO koorkkenchery chiyaram	880
54	22.03.22	Cheriyan ,Cheruthruthy	280
55qa	23.2.22	Madhu .P.K	620
56	22.2.22	Manna Stores	880
57	23.2.22	Josettans Bakery	880
58	23.3.22	Gireesh	705
59	31.3.2022	Kerala Kalamandalam	940
		Total samples 59	**Rs. 36376**

Water sample analysis of CWRE during 2022-23

Sl. No	Date	Name of Customer	Amount
1	26.4.22	P.P.uhammed kutty	705
2	26.4.22	Kalamandalam	940
3	26.4.22	Anilkumar	640
4	7.5	Paulose	500
5	7.5	Azeez	705
6	7.5	Musthafa	705
7	14.5	Azada	573
8	16.5	Babu	500
9	18.5	Achuthan kutty	940
10	18.5	Valsaraj	705
11	24.5	GHSS panjal	880
12	27.5	Amrutha vidyalayam	880
13	27.5	Ramachandran	660
14	27.5	Kiranlal	660
15	30.5	manzoor	705
16	30.5	Shahul hammed	705
17	30.5	Shahul hammed	705
18	4.6.6	Aups pallikkal	940
19	6.6.22	Netahji Memmorial school	880
20	10.6	Aboobacker	940
21	13.6.22	Noufal	880
22	13.6.22	Azeea P.M	880
23	20.6.22	Jaya Prabha	660
24	28.6.22	Abdul azeeb	880
25	30.6.22	PNNM hospital	2640
26	1.7.22	Shefeeq PS	940
27	6.7.22	Franco MP	660
28	20.7.22	Abdul Jallel	705
29	21.7	Pradeep	880

30	25.7	Anju	705
31	16.8	Mirash	2760
32	16.8	FHS Vallathol NAGAR	880
33	16.8	Ramesh	3520
34	26.8	Abdu K.M	940
35	18.9	Rafeeq	940
36	22.9	PHC varavoor	880
37	27.9	Shameer	645
38	27.9	Vinod .A.D	880
39	27.9	Kabeer	705
40	6.10	FHC panjal	1100
41	13.10	Saheer	1100
42	13.10	Community Health centre	1275
43	14.10	Sumesh	1100
44	19.10	Sharaffali	1100
45	19.10	Marcus	1100
46	21.10	Marcus	1275
47	26.10	Vinod nair	1275
48	26.10	Unnikirishanan	1275
49	26.10	Ali	825
50	26.10	Jameela	310
51	1.11	Jameela	310
52	11.11	Noorul Islam Madrassa	470
53	1.11	Noorul Islam Madrassa	470
54	10.11	Smitha	455
55	16.11	Saritha	380
56	16.11	Biju Thomas	400
57	16.11	Araffa school	2375
58	16.11	Ubaid	690
59	16.11	Rashed	690
60	17.11	NARIT	2375
61	22.11	Abdul Azzeb	1275

62	1.12	Sympany	831
63	1.12	Vellarakkd ws	831
64	6.12	Saithalavi	745
65	6.12	Pushpalatha	1100
66	12.12	Baji	266
67	14.12	Araffa	1100
68	19.12	Jazaar	825
69	19.12	Saiffudheen	920
70	21.12	VISCA	2200
71	3.1.23	Shameer	1275
72	4.1.23	Shahul hameed	1274
73	5.1.23	Ali	745
74	11.1	Mustaha	1270
75	11.1.23	Manikandan	1100
76	17.1.23	Shaji	1175
77	13.1.23	Noufal	1270
78	15.1.23	Mustafa	1100
79	17.1.23	Rafeeq	1100
80	17.1.23	GUP school	825
81	17.1.23	Saleem	1175
82	17.1.23	Sulaiman	355
83	18.1.23	Shahid	615
84	18.1.23	Riaz	615
85	19.1.23	Sasikumar	1100
86	19.1.23	NSSHSS,Mullurkkara	1100
89	25.1.23	Seena	560
90	25.1.23	Sandeep	615
91	25.1.23	Deepu prasasad	1100
92	27.1.23	Sumathi	385
93	27.1.23	Annapoorna catering	1100
94	30 .1.23	Sumath	385
95	2.2.23	JBR restaurant	1100

96	2.2.23	Shahul hameed	1100
97	17.1.23	BIJU C.V	450
98	2.2.23	Ravi	1100
99	13.2.23	Archa Ice factory	1100
100	14.2.23	Sainaba	1100
101	15.2.23	Jithin .K jose	450
102	17.2.23	Ramlath	1100
103	25.2.23	Muhammed	1175
104	1.3.23.	Vavachan	1100
105	3.3.23	PNNM ,Auyverda college	1175
106	3.3.23	Madhu	825
107	3.3.23	Hotel central	880
108	6.3.23	Azar K.H	1175
109	6.3.23	Sympathy lenin	615
110	6.3.23	Anil Antony	1365
111	7.3.23	Amal sony	660
112	7.3.23	Seethal	660
113	13.3.23	Seth Madhavan	615
114	15.03.23	Salman	560
115	17.03.23	Gireesh	880
116	22.03.2023	Shankar	560
117	20.03.2023	Ali	280
118	22.03.23	Rahulraj	645
119	24.03.2023	Babu	880
120	28.03.2023	Ikbal	560
121	22.03.2023	jackson	560

Year 2023-2024			
1	05.04.23	Ayurraksha	1100
2	09.04.23	M.N catering	1100
3	10.04.23	Akhil N K	560
4	10.04.23	Abdul Nazer	495

5	11.04.23	Gopi C.K	345
6	12.04.23	Alvin Lalu	500
7	11.04.23	Jeena Joy	560
8	03.05.23	Vineetha	745
9	08.05.23	Ishak	1100
10	08.05.23	Sanjay	560
11	08.05.23	Babu	400
12	16.05.23	Sumathi	330
13	18.05.23	Baaji Jose	475
14	18.05.23	Soumya K.V	1100
15	23.05.23	ALPS School	1100
16	22.05.23	GLPS Thozhupadam	1100
17	24.05.23	GUPS Painkulam	560
18	24.05.23	Anshif P	560
19	24.05.23	Ummer P.K	1100
20	29.05.23	GHSS Panjal	2200
21	29.05.23	NARIP	630
22	29.05.23	Suresh Babu, Chelakkara	475
23	30.05.23	Usha P.K, Killimangalam	475
24	30.05.23	GHSS Varavoor	1100
25	31.05.23	Ashlin	450
26	31.05.23	Kesavan T.P, Cheruthuruthy	560
27	31.05.23	Abdul Azis, Cheruthuruthy	560
28	30.05.23	AUPS Pallikkal,Pallam	1100
29	03.06.23	Mohandas, Cheruthuruthy	560
30	01.06.23	Sasidharan, Cheruthuruthy	560
31	05.06.23	Franklin Francis	492
32	06.06.23	Vijay A.P, Chelakkara	745
33	07.06.23	Sheena Benny, Thiruthiparamb	745
34	07.06.23	Devadas T.N,Thrissur	1170
35	07.06.23	Amritha Vidhyalayam, Cheruthuruthy	1100
36	07.06.23	Kismees Resto Café, Vaniyamkulam	1100

37	07.06.23	Kismees Restaurant, Cheruthuruthy	1175
38	09.06.23	Adukkala Hotel, Cheruthuruthy	1100
39	13.06.23	Beeran Pattathil,Malappuram	1100
40	14.06.23	Thilakan, Cheruthuruthy	250
41	16.06.23	Shahul Hameed,Cheruthuruthy	820
42	19.06.23	Vallathol Nagar FHC	1175
43	19.06.23	Sandeep, Shornur	745
44	26.06.23	Madhavan K.R, Painkulam	615
45	01.07.23	PNNM,Ayurveda Medical College, Cheruthuruthy	1175
46	06.07.23	Sajith, Killimangalam	380
47	06.07.23	Rafeeq, Varavoor	645
48	11.07.23	Sulaikha, Cheruthuruthy	560
49	20.07.23	Jamsheer Babu, Nellaya	1175
50	19.07.23	Surendran, Panjal	745
51	21.07.23	Iyathukutty,Chelakkara	745
42	21.07.23	Siny Paul, Wadakkanchery	745
53	08.08.23	Hotel Al Ameen, Cheruthuruthy	1175
54	09.08.23	Suhara, Deshamangalam	745
55	07.08.23	Sojan , Pazhayannur	745
56	16.08.23	Sreyas, Varavoor	1100
57	18.08.23	Ajitha M.V, Thrissur	1100
58	23.08.23	Sreejith, Painkulam	615
59	22.08.23	Alwyn Varghese	450
60	05.09.23	Hotel Veegan Plaza,Cheruthuruthy	1100
61	05.09.23	Hotel Sanas,Vazhakodu	1100
62	07.09.23	Burger House, Cheruthuruthy	1100
63	11.09.23	Hamdi Kuzhimanthi, Cheuthuruthy	1100
64	08.09.23	Zera Bakery and Cool Bar, Varavoor	1175
66	08.09.23	Friend s of Bharathapuzha sample	No charge
67	14.09.23	Ashraf Mulakkal, Vettikatiri	560
68	15.09.23	Minnu Merin, Cheruthuruthy	450

69	15.09.23	Mohammed Shafi, Vettikatiri	560
70	18.09.23	Seetheswari,Pilakkad	880
71	18.09.23	CHC Pazhayannur	1027
72	21.09.23	Haneefa, Panjal	1100
73	25.09.23	Gayathri P.V,Harithanagar	900
74	04.10.23	Sreedevi, Mulloorkara	825
75	04.10.23	Shaju, Vazhakodu	550
76	04.10.23	Sabira, Vazhakode	550
77	04.10.23	Yousaf, Vazhakode	550
78	04.10.23	Jaintess, Vazhakode	825
79	05.10.23	BOREWELL QTRS, Mulloorkara	177
80	05.10.23	Family Health Centre, Thiruvilwamala	1100
81	06.10.23	Govt. Polytechnic College, Chelakkara	1100
82	11.10.23	Razak, Painkulam	480
83	16.10.23	Sanoj, Varavoor1	1100
84	16.10.23	Sarojini V.R,Varavoor	1100
85	16.10.23	Jithin Raj A.N,Mulloorkara	1100
86	17.10.23	Medical Officer, Varavoor(PHC)	1100
87	17.10.23	Hyra Mandi, Cheruthuruthy	1100
88	26.10.23	GUPS Killimangalam	880
89	26.10.23	Muhammed Kunjhi,Mullurkara	570
90	26.10.23	FHC Panjal	825
91	27.10.23	Lijo	450
92	30.10.23	Aswin Gopinath, kanniyampuram	950
93	30.10.23	Jisha Joju, Kodannur	745
94	31.10.23	Eat Club, Cheruthuruthy	1100
95	15.11.23	Sharafali, Vaniyamkulam	1100
96	16.11.23	Bismi Catring,Parakulam	1100
97	20.11.23	Shameer,Cheruthuruthy	440
98	21.11.23	Arafa Charitable Trust,Attoor	2275
99	20.11.23	Salam P.S, Cheruthuruthy	560
100	29.11.23	Blue Ginger,Cheruthuruthy	1100

101	29.11.23	Shahul Hameed,Cherthuruthy	880
102	30.11.23	Velur Gramapanchayath,Pazhavoor	3525
103	1.12.23	Razak painkulam	615
104	11.12.23	Gangatharan,Killimangalam	615
105	11.12.23	Rajentran,Shornur	745
106	18.12.23	K,K.Mathew,Vadakkanchery	745
107	18.12.23	Muhammed Ali K.S,Painkulam	885
108	03.01.24	Mehrin Shahul P.M,Deshamangalam	
109	04.01.24	Krishnankutty,Painkulam	490
111	09.01.24	Sandeep,panjan	880
112	16.01.24	Sibi Abraham,Vettikattiri	343
113	08.01.24	FOB Water Sample	
114	19.01.24	Sujesh,Cheruthuruthy	820
115	20.01.24	Moidheenkutty,Thiruvilwamala	820
116	31.01.24	Noufal,Vettikattiri	1100
117	08.02.24	Amma Bakery,Cheruthuruthy	1100
118	08.02.24	Vavachan Joseph,Thiruvilwamala	1175
119	13.02.24	Prameela k,Cheruthuruthi	745
120	15.02.24	Manikandan,Aattoor	745
121	20.02.24	Annapoorna Catring,Manapadi	1100
122	22.02.24	Shahul Hameed A.M,Vettikattiri	745
123	27.02.24	VictorManjila	745
124	23.02.24	Ignatius,Hill Gardan	790
125	23.02.24	Joseph, Hill Gardan	600
126	24.03.24	Budget FoodCourt, Cheruthuruthy	1100
127	04.03.24	Devamatha,Province	2490
128	11.03.24	Jincy,Aattoor	450
129	11.03.24	Shaju M,Cheruthuruthy	1000
130	11.03.24	Harish N, Shornur	1000
131	14.03.24	Ramesh, Cheruthuruthy	560
132	18.03.24	Nikhil Shiju	500
134	18.03.24	Kismees restaurant,Cheruthuruthy	1175

135	18.03.24	Kismees restaurant,Ottapalam	1175
136	19.03.24	Assistant Engineer,LSGD,MG Kavu, Thrissur	1100
137	25.03.24	PNNM Ayurveda Medical college	1175
138	22.03.24	NARIP, Cheruthuruthy	1760
139	24.03.24	New Regal Bakery, Shornur	1100
140	26.03.24	Sumesh , Vettikatiri	560

Year 2024-25			
1	04.04.24	Fusion Soft Drinks, Killimangalam	1175
2	09.04.24	Madhu PK, Cheruthuruthy	1100
3	09.04.24	Muhammed AA,Wadakkanjery	450
4	09.04.24	Said Ali KH, Aattoor	1100
5	09.04.24	River Retreat Resort	1175
6	15.04.24	Abhilash, Desamangalam	745
7	16.04.24	Lijo T J	450
8	17.04.24	Abdul Rasheed	745
9	23.04.24	Govt Polytechnic College Chelakkara	1100
10	29.0424	Yousaf, Vettikattiri	560
11	29.04.24	Mohammed Koya, Cheruthuruthy	560
12	30.04.24	Jisha Akkara	280
13	02.05.24	Vallathol Nagar Gramapanchayath	4400
14	07.05.24	Hamsa, Pudussery	560
15	04.05.24	Sudheesh	500
16	15613.05.24	Hotel Sree Padmanabha, Cheruthuruthy	1100
17	15.05.24	Jayathilakan, Vazhakodu	820
18	16.05.24	Amrutha Vidhyalam, Cheruthuruthy	2200
19	20.05.24	Rajendran M K, Varavoor	1100
20	21.05.24	Riyas, Cheruthuruthy	820
21	20.05.24	Anil Aseez, Varavoor	2200
22	22.05.24	GGLP Wadakanchery	1100
23	23.05.24	Muraleedharan T V, Shornur	820

24	27.05.24	Muhammed Kutty, Cheruthuruthy	1100
25	27.05.24	Shabeer, Shornur	1100
26	29.05.24	Hamsa, Aattoor	825
27	27.05.24	GLPS Mullurkara	700
28	29.05.24	Muhammadhali, Cheruthuruthy	825
29	28.05.24	GUPS, Killimangalam	1650
30	29.05.24	Al Irshad English School, Killimangalam	2200
31	30.05.24	Akamala Sreedharama Sastha Kshethra Trust	585
32	01.06.24	British Bake, Cheruthuruthy	1100
33	30.05.24	GUPS Painkulam	825
34	03.06.24	GHSS Cheruthuruthy	1000
35	04.06.24	Sarath, Cheruthuruthy	
3	07.06.24	Subina S S	350
37	04.06.24	Arafa Charitable Trust, Attoor	2200
38	05.06.24	Priya Hotel, Vazhakodu	1100
39	10.06.24	Café Makani, Cheruthuruthy	1100
40	10.06.24	Govt Premetric Hostel, Cheruthuruthy	825
41	12.06.24	Ajna C A, Cheruthuruthy	825
42	13.06.24	GLPS Varavoor	1200
43	13.06.24	Nethaji Memorial E M School, Cheruthuruthy	825
44	13.06.24	Ramachandran M V, Mullurkara	1100
45	13.06.24	Aided U P Scool, Pallikkal	825
46	18.06.24	Surayakumar C, Chiyaram	585
47	25.06.24	Kamarudheen, Varavoor	1200
48	27.06.24	Father Ajeesh	
49	02.07.24	Assistant Engineer, Chovannur Block Panchayath	1175
50	02.07.24	Muhammed, Thazhapra	560
51	27.06.24	Suneeth Sukumaran	500
52	05.07.24	Regal Bekary, Cheruthuruthy	1100
53	09.07.24	Deepa Suresh Nair, Cheruthuruthy	560

54	09.07.24	Regal Bekary, Cheruthuruthy	1200
55	19.07.24	Assistant Engineer Chovannur Block Panchayath	1100
56	19.07.24	Sankara Narayanan, Varavoor	820
57	19.08.24	Salman, Vettikattiri	615
58	02.08.24	Kodakkarankunnu Drinking Water Project, Desamangalam	745
59	05.08.24	PHC Varavoor	600
60	06.08.24	Sundaran K R, Attoor	820
61	06.08.24	Jonson E C, Killimangalam	1175
62	06.08.24	Thomas R	450
63	06.08.24	FHC Desamangalam	1500
64	09.08.24	Agricultural Officer, Thiruvilwamala	1100
65	14.08.24	Afsar P H, Arangottukara	1200
66	16.08.24	Simi Xavier, Killimangalam	360
67	21.08.24	Azeez P M, Vettikattiri	1175
68	21.08.24	Kunjumuhammed, Thazhapra	1175
69	30.08.24	Pallam Paithal Jaram, Pallam	560
70	30.08.24	New Nila Bekary, Mullurkara	1100
71	03.09.24	Prasanth P K, Cheruthuruthy	825
72	03.09.24	River Retreat Cheruthuruthy	1100
73	05.09.24	Rafeeq, Mullurkara	745
74	05.09.24	Arun, Nedumbura	845
75	06.09.24	Hamdhi Kuzhimandhi, Cheruthuruthy	1100
76	10.09.24	Anna Mariya K J, mannuthy	660
77	11.09.24	Hussain M M, Thozhupadam	1100
78	11.09.24	Muscat Bakery, Desamangalam	1000
79	23.09.24	Zum Zum Food Court, Cheruthuruthy	1175
80	28.09.24	Gopakumar, cheruthuruthy	560
81	28.09.24	PVA Hot and Cool, Cheruthuruthy	1100
82	30.09.24	Vinod Menon, Shornur	760
83	1.1024	KH catering service ,panjal	1100

84	17.10.24	Deepthi mohan	400
85	14.10.24	Subbash Mulloorkkara	1100
86	17.10.24	Sunil kumar ,vaniyamkulam	615
87	18.10.24	Vinod nair ,Desamnagalam	1175
88	24.10,24	Hotel Al ameen	880
89	26.10.24	Markaz Hadiya womens college	2275
90	31.1024	Sukuamaran painkulam	615
91	29.10.24	Malabar colleg	1100
92	29.10.24	Hamza mullorkkara	325
93	30.10.24	M.M.ali puthussery	560
94	4.11.24	K.S Balakrishnan chelakkara	820
95	5.11.24	Akhil k,kevicheri ,puthusey	825
96	7.11.24	A.one catering	1100
97	7.11.24	Firoz Ahamed	1175
98	7.11.24	Gopika P.V perinchery	500
99	7.11.24	Valsala ,puthussery	825
100	7.11.24	Moosa ,Thekkeparambil	1100
101	18.11.24	Cheriyan IPC shalom	350
102	18.11.24	Anas , Keezhthully,Nedupura	825
103	22.11.24	Shanoij	1100
104	22.11.24	Manojkumar HOD Me	350
105	25.11.24	Ramdas	615
106	28.11.24	Sulaiman, Desamanalam	1100
107	30.11.24	Sagar suresh	560
108	2.12.24	Kabeer,pudussery	1100
109	2.12.24	Muhammed , pallam	825
110	4.12.24	Abdul Azeez	615
111	5.12.24	Abdul Manaaf	880
112	6.12.24	Ummer karanchery	1595
113	6.12.24	Medical officer varavoor	2200
114	9.12.24	Medical officer ,FHC Thekkumkara	1100

115	9.12.24	Medical officer PHC Vallathol Nagar	1175
116	11.12.24	Medical officer PHC Vallathol Nagar	1175
117	13.12.24	Rasheed ,Thozhpadam	300
118	16.12.24	Medical officer PHC Mulloorkkara	1100
119	17.12.24	Suneesh kumar, Mulloorkkara	1100
120	18.12.24	Noushad ,Mulloorkkara	825
121	18.12.24	Prajeesh, Mullorkkara	825
122	18.12.24	Vimal K.Y Killimangalam	1100
123	31.12.24	Raveendran K kunnath Attoor	820
124	30.12.24	Walnut juice home , vaniyamkulam	1100
124	6.1.25	Cake lakes , cheruthurthy	1100
125	7.1.25	Eat club Cheruthuruthy	1100
126	7.1.25	Leo Mathew staff RA	250
127	6.1.25	Musthafa ,Attoor	820
128	6.1.25	Amma Bakery	1100
129	8.125	FHC Elanad	4890
130	8.1.25	Salma Khaja hussain	560
131	8.1.25	KB juby Kolazhay	870
131	8.1.25	Aswin K.A kolazhy	870
132	8.1.25	Harikrishnan, Vadakkekara ,Shornur	1100
133	10.1.25	Ruman Bakery ,Pallam	1100
134	17.1.25	Pushparaj Associates	17000
135	20.01.25	Yousaf vettikkattiri	615
136	20.01 25	GUPS Kilimangalam	880
137	21.01.25	Chowannr BP	2350
138	21.01.25	Grace maria student	300
139	21.01.25	Musthaffa Attooor	745
140	23.1.25	Kismas Resto café	1175
141	18.01.25	Happy melam ,pappadam , Puthussry	1175
142	29.01 .25	Health Welfare center	1175
143	30.01 25	Ali. K .M, Pallor ,Desa Mangalam	1175

144	1.2.25	Sandhaya .M	1175
145	1.2.25	Shafeer , Cheruthruthy	550
146	4.2.25	Ibrahim CM catering painkulam	1175
147	6.2.25	Narayanam Thaikkattu	825
148	10.2.25	City hotel ,Pallam	1175
149	7.2.25	Harish .M Nambrath	1175
150	10.02.25	PNNM ayurveda hospital	1175
151	11.02.25	Kunjumuhammed kalathil	1100
152	11.02.25	Ramsil ,Ottappalam	1416
153	12.02.25	Anzil Manthiyil ,Vettikkattiri	825
154	12.02.25	Razak , Puthiya veettil ,Vettikkattiru	825
155	12.02.25	Mr cool Enterprizes ,Painkulam	1100
156	14.02.25	K.K.foods , kolappully	1175
157	11.02.25	Abubaker , cheruthurhty	1100
158	21.02.25	Archana Ice company	1175
159	21.02.25	City cool bar	1100
160	24.02.25.	Ushadevi Kunnath ,Painkulam	1100
161	28.02.25	Saisdharan , sree vihar ,Cheruthurthy	500
162	28.02.25	Kunhumuhammed ,Kalathil ,cheruthuruthy	1100
163	28.02.25	Sabith VP manjakkadu	1100
		Total	185000

Appendix B

Research Findings for Water Quality. Issues in Kerala State and Remedial Measure

As soon as a customer reaches the lab, we conduct a preliminary discussion with the customer and based on that the parameters to be tested are identified. upon analysis if we feel that site inspection is essential, we do that In case if it isfound insufficient we ourselves inspect the site to take stock of the situation so that to help the customer. The following information are useful. in this respect. We also recommend commercial water treatment equipment like softener.

Water quality deterioration, especially of individual water sources like wells, bore wells etc. The following are the normal water quality problems generally observed and listed below chronologically in the order of its abundance.

1. Bacterial presence
2. Deviation in pH value- low pH, very low pH, and High pH
3. Excess iron
4. Excess turbidity
5. Excess fluoride
6. Excess chloride
7. White color for the well water
8. Excess conductivity
9. Organic pollution measured as BOD/COD
10. Excess hardness
11. Growth of algae
12. Carbonate deposition

Table 7. Causes and remedies of water quality issues

Sl. No	Water quality issues	Causes	Remedial measures
1	Excess Bacterial presence	Ubiquitous Presence of coliform	Disinfection
2	Excess iron	Dissolved from the earth	Aeration, sedimentation, filtration and other methods using ISR
3	a) low pH	Absorbing CO2 from the surface of the earth pH below 6.5 and up to 4	Increasing the pH byadding lime
	b) very low pH	Natural processes which leads to formation of mineral acids, nearby gold processing units which discharge acids pH below 4	Increasing the pH byadding lime
	c)high pH	Formation of calcium and magnesium bicarbonate whenwater is percolated through theearth	Weak acids can be used
4	Excess turbidity	Conditions in the surroundingsoil , presence of Iron	Filtration, coagulation and flocculation, sedimentation
5	Excess fluoride	Gynogenic reasons	Domestic kit using activated alumina or domestic kit using reverse osmosis process

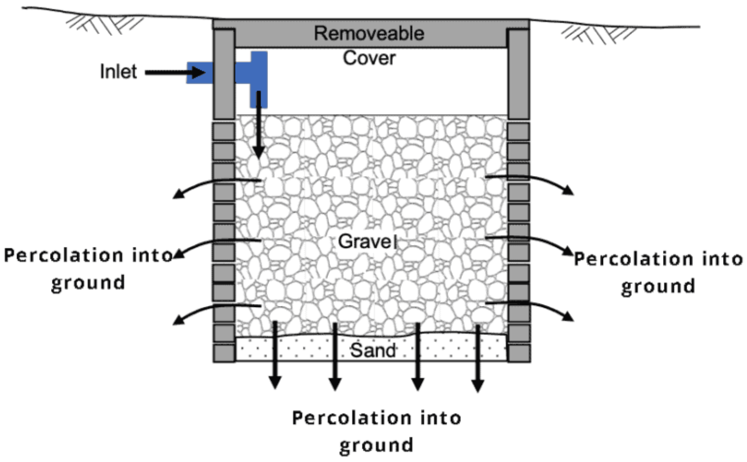
6	Excess Chloride	Sea water intrusion, presenceof saline soil	Proper maintenance of water source. Reverse osmosis-based kits
7	Excess conductivity/TDS	Presence of ions, mainly, chloride	Do
8	Organic pollution measured as BOD/COD	Intrusion from nearby polluting source	Removal of waste source, disinfection
9	Excess hardness	Formation of calcium and magnesium bicarbonate whenwater is percolated through theearth	Softeners
10	Excess Nitrate	Natural processes, fertilizers	Conventional methods
11	Growth of Algae	Waste source, sunlight	Preventing Sunlight. Copper Sulfate, chlorine
12	Carbonate deposition	Removal of CO_2 from water and subsequent deposition of$CaCO_3$	Aeration, followed by filtration

Disposal systems

Sl. No.	Type of treatment	Purpose
1	Septic tank	Excreta disposal
2	Leach pit	Excreta disposal
3	Soak pit	Waste water
4	Composting / biogas	Solid waste
5	Planting trees around houses	Absorbing CO2

All the above systems to be effective

Soak pit only proper construction



Well maintenance

Well should be located in a hygienic manner

No waste source nearby especially upstream

Almira and platform around is highly essential

Avoid excessive pumping from the well

Use low power pump set

Keep the foot valve just below the water level

Wells should not be kept in

1) **Presence of Bacteria (indicator organism coliform)**

Coliform is a group of bacteria present in human excreta

It comprises of 10 % of all the bacteria in human excreta

In water analysis it is used as an indicator of presence of human excreta in water supply

Coliform is present in more than 80 % of our traditional water sources

2) Reason for selecting coliform as an indicator

Its presence in human excreta is significant

Out of all the bacteria in the human excreta, it is the long lived

Its analysis is simple

3) Limitations of Coliform as an indicator

In addition to human being, it is present in the excreta of all the hot-blooded animals

A strict indicator should not reproduce after discharging in to the surface of earth but in favourable conditions coliform reproduces

Treatment for coliform is effective disinfection by using bleaching powder or any other disinfectant

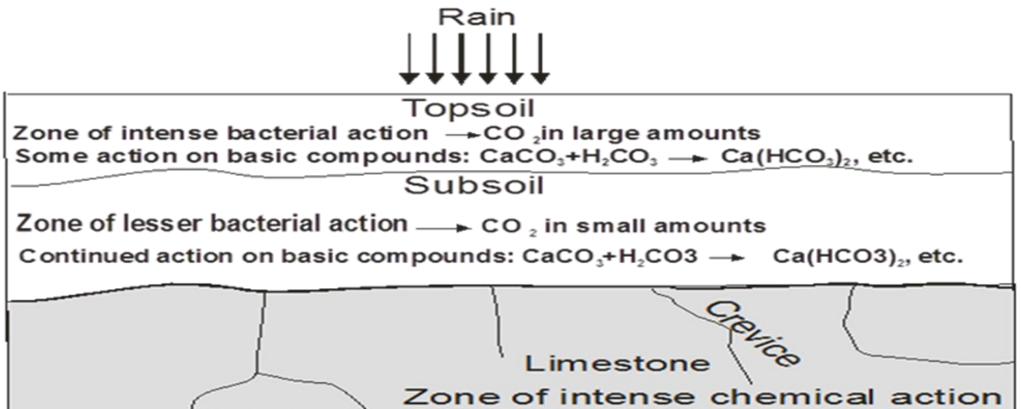
4) Variation in pH value a)Low pH and high pH

About 60 % of well water samples are having low pH

High pH occurs in limited places

Low pH imparts sour taste and corrosive nature

Carbon dioxide dissolution from the surface of the earth and subsequent chemical reaction



Is the cause for variation in pH value refer fig above

From the top of the earth CO2 dissolve in water and thereby carbonic acid is formed – this reduces the pH Value in a shallow well

When water percolate through the earth carbonic acid reacts with the calcium carbonate and calcium bicarbonate is formed and thereby pH increases alkalinity, hardness etc also increases

As it go deeper magnesium carbonate also comes in to picture and reaction takes place as given above in the figure above

That means in shallow well acidity will be more pH will be more and in deep wells and borewells pH will be more alkalinity and hardness will be more

Treatment for pH variation

Low pH can be increased by adding any suitable alkaline substances say lime

High pH can be reduced by adding acidic substa**nces**

5) Presence of excess Iron

Iron constitutes approximately 6% of the earth crust
3% in soluble Fe2+ form and 3% in insoluble Fe 3+ form
While rain water is percolated through the earth Fe2+ dissolves in the water
Organic pollution of water increases presence of Iron since some bacteria use Fe3+ as an Electron acceptor

Important bad effect of presence of iron are as follows

Sl, No	Bad effects	Reason
a	iron taste	
b	Change in colour when exposed to atmosphere	(oxidation of ferrous Iron to ferric Iron)- $Fe^{2+} + +O_2 + H_2O = Fe(OH)^3 + H^+$
c	more requirement of milk for preparation of tea to get the minimum flavor	Excess requirement of milk to prepare tea of required flavor(Iron +Tanin = black colour)

d	Staining in vessels	due to oxidation , it is a special property of oxidation to form color
e	Deposition of mud after the water is boiled	More oxidation on heating
f	Oily appearance on the surface of water due to growth of iron bacteria	due to the growth of iron bacteria

Treatment for excess iron

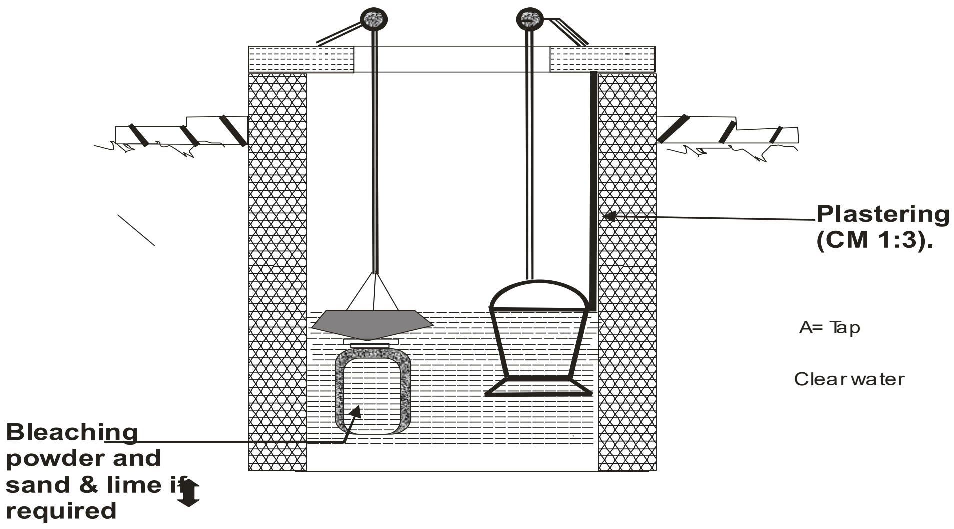
Increase the pH of water by adding suitable alkaline materials (lime , Soda ash, bleaching powder)

Aerate the water for oxidation to take place

Fe^{2+} $+ O_2 + H_2O$ -------- $Fe(OH)_3^+$ $+ H^+$

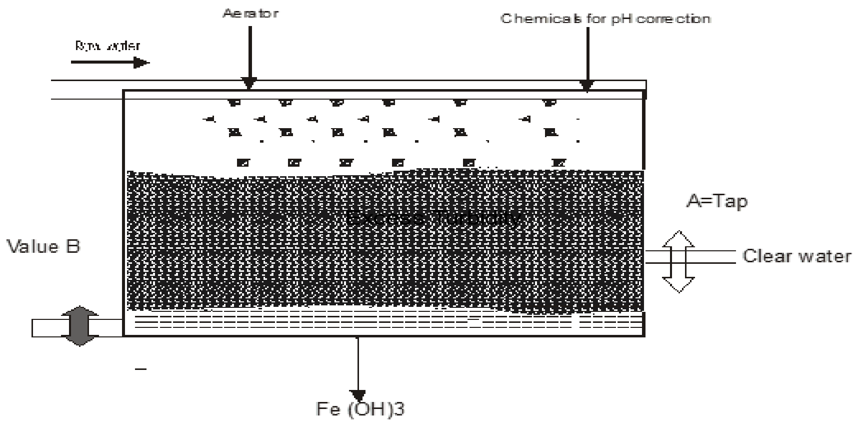
Allow for settling and thereafter for filtering

Disinfect to make it potable



Iron treatment in a well

We can add bleaching powder in the well directly as given in the figure and mix properly. This can be done say in the evening and pump water from just below the top water level in the next day



Treatment in a tank

Instruct the tank in such a way that cleaning and sedimentation is easy as given in the figure above. Pump water and add bleaching powder and keep it as such for say 10 hours . With draw water from the outlet valve

Other domestic treatment systems are available

Excess Turbidity

It occurs in certain wells and in certain water sources

Treatment is plain sedimentation /coagulation, sedimentation/ Filtration etc

6) Excess fluoride

Fluoride dissolves from the crust of the earth

Fluoride presence will be more in water sample with less calcium

$$Ca+F2 \Longrightarrow CaF2$$

There is affinity between fluoride and calcium so the fluoride gets removed from the water

In kerala Alappuzha and Palakkad is mainly affected

Domestic kit using activated Alumina is suitable for removal of Fluoride

Equipment using the principles of Reverse Osmosis can also be used

Fluoride presence will not show any apparent effect other than the diseases caused fluorosis

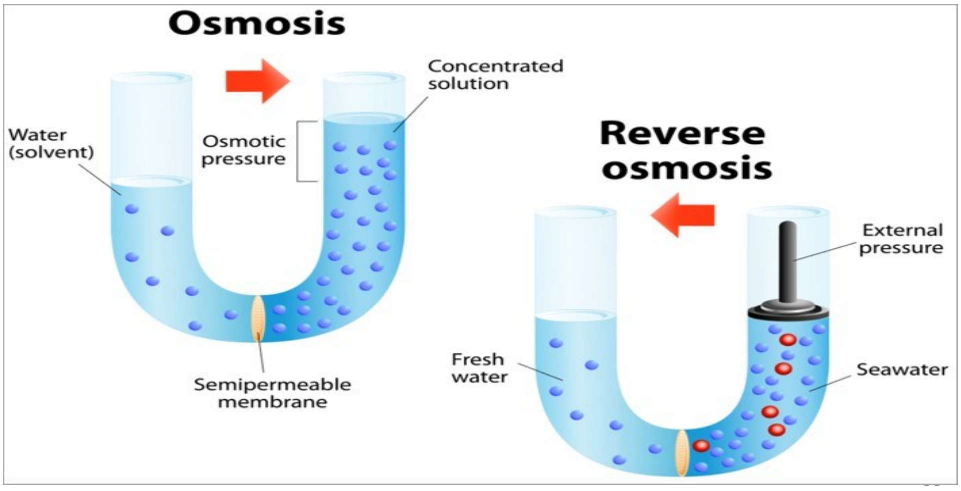
Water Filters: One way of avoiding the fluoride from tap water is to purchase a water filter. The three types of filters that can remove fluoride are reverse osmosis, deionizers (which use ion-exchange resins), and activated alumina

The Berkey systems are our pick for a simple, ecological fluoride solution.

Reverse osmosis kits

Reverse osmosis (RO) is a water purification process that uses a semi-permeable membrane to separate water molecules from other substances. RO applies pressure to overcome osmotic pressure that favors even distributions. RO can remove dissolved or suspended chemical species as well as biological substances (principally bacteria), and is used in industrial processes and the production of potable water. RO retains the solute on the pressurized side of the membrane and the purified solvent passes to the other side. Picture below gives

Reverse Osmosis based equipments



Reverse osmosis process

7) Organic Pollution

Organic pollution occurs when large quantities of organic compounds, which act as substrates for microorganisms, are released into water sources. Organic wastes from people and their animals may also be rich in disease-causing (pathogenic) organisms

Intrusion of waste in to water sources causes pollution

Black colour and death of fish / uneasiness for the fish is manifested

Identify such sources and remove it

Always remove such waste sources from near the water sources and chlorinate the water source / well

8) Presence of Chloride in Drinking water

Sea water intrusion in coastal area

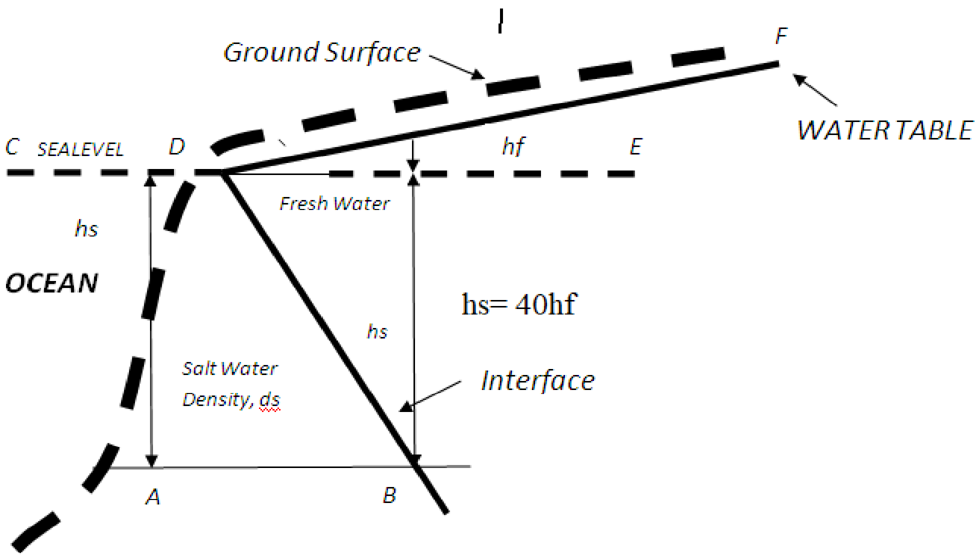
In certain open wells in Palakkad district

Ghyben – Hertzberg equation for intrusion of sea water

In coastal area withdrawal of fresh water results in to intrusion of sea water

Above the water level in the sea if fresh water is available for a height of hf in the nearby land area there must be 40hf of fresh water below the water level in the sea to prevent sea water intrusion

Rain water harvesting is essential in coastal area

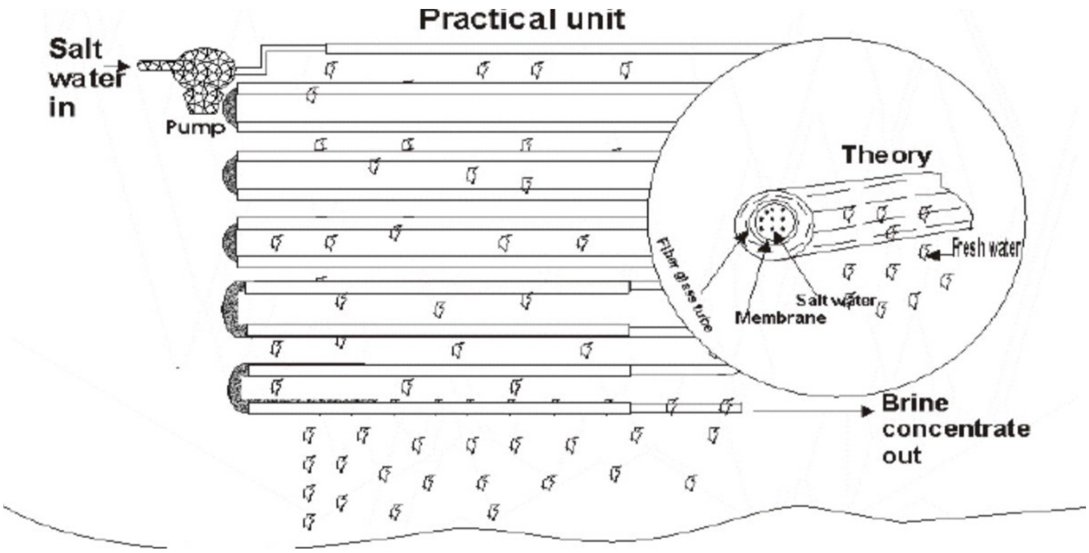


Pictorial representation of ghyben – Herzberg equation

Commonly used method for treatment for removal of Chloride is Reverse osmosis (RO)

Some (RO) units are being used in coastal area of Kerala

Ghyben – Hertzberg equation



RO practical Unit

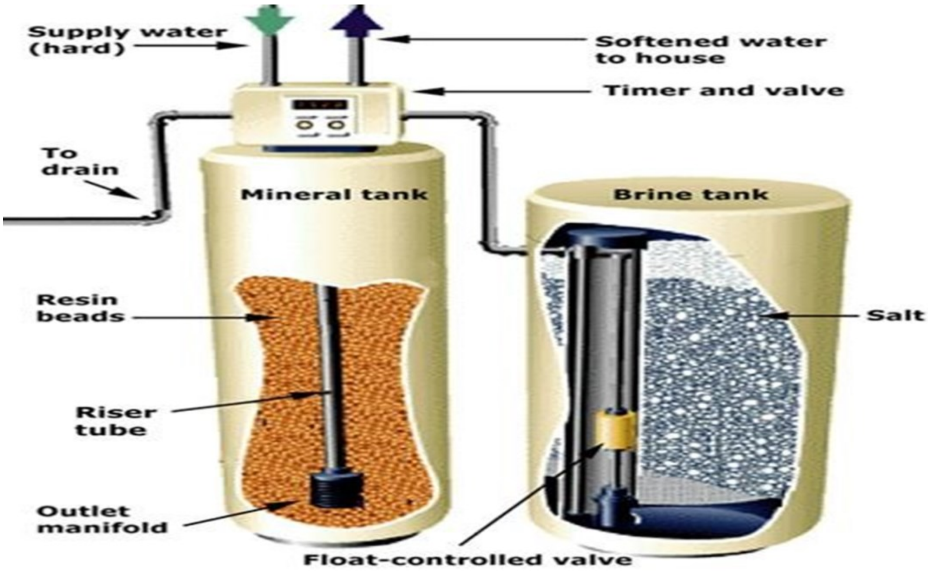
RO plant in Jubail Saudi arabia

9) Hardness

Hardness is caused by multivalent metallic cations mainly calcium and magnesium
Deep water sources are generally hard
If topsoil is thick hardness will be more
Softeners are that equipment which remove calcium and magnesium are commonly used for its removal
Hardness will be more in deep water sources like borewells
to a certain extent Presence of hardness in drinking water is considered as good for heart diseases
hardness produces white deposit on boiling
reason is dissolution of calcium bicarbonate

$Ca(HCO3)_2$------- $CaCO_3$+CO2+H_2O

Softeners for hardness removal



10) Growth of Algae

In wells water is good in the morning but as sunlight falls color change occurs

Water sources gets polluted due to algae growth

Algae is water plant which requires sunlight for its growth

Treatment for algae growth is prevention of sunlight, chlorine or copper sulphate

Appendix C

Awareness programme on 1.6.2019

1) **One day awareness on water conservation was conducted on 1.6.2019 Unnat Bharath Abhiyan activities**

The programme was carried out as a part of Unnat Bharath abhiyan activities . the audience were mainly health inspectors , Asha workers and teachers and students . the programme was inaugurated by the panchayath president of cheruthuruthy and participated by

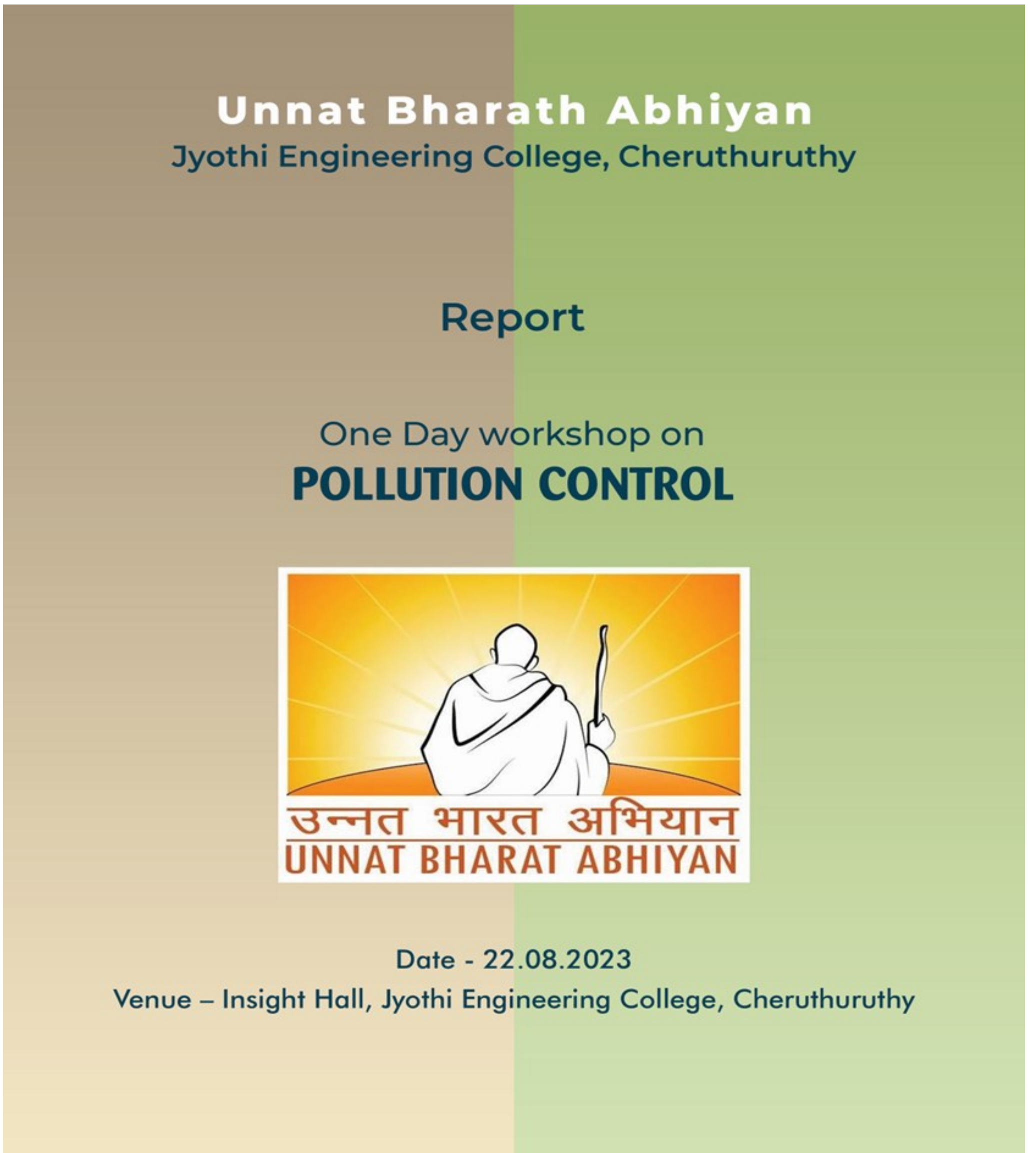
The training was mainly aimed for officials of health department ie female workers since they are more concerned with these types of issues and we expect merit, due to their constant interaction with the rural women groups. So we have initiated steps for ensuring participation of more members from Asha workers, and Kudumbasree people etc . The staff from the Jyothi engineering college were also invited and many of them accepted it with a positive attitude. The programme was well attended by 43 persons from both the panchayaths which includes 3 nos of health inspectors 33 Asha workers and 7 no's of kudumbasree people. From Jyothi engineering college 11 staff took part and thereby the total tally comes to 54. The expenses for this programme was met form the seed money of Unnat Bharath Abhiyan

Fig 1 Symbol of Unnath Bharath Abhiyan

Fig 2 Programme being inaugurated by Mrs Padmaja President Vallathol Nager Gramapanchayat

Fig 3 Participants of training to health officials One day awareness programme

Awareness programme on 22.08 2023



Appendix D

ONE DAY AWARNESS TRAINING ON WATER CONSIDERATION

DATED 22 -08-2023

LIST OF CONTENTS

1. Introduction
2. Background
3. Objective
4. Centre for Water Research and Education (CWRE)
5. Programme schedule
6. Co -Ordinator's Participants and faculties
7. Subject coverage and materials provided
8. Feed back
9. Follow up action
10. Financial aspects of the programme
11. Conclusion
12. Appendices

1. Introduction

Unnat Bharat Abhiyan a flagship programme of the government of India and inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India. This was the dream of the father of nation Mahatma Gandhi that real India is residing in rural areas and their development must be our top priority. This mission is conceptualised as a movement to enable processes that connect institutes of higher education with local communities to address the development challenges of rural India through participatory processes and appropriate technologies interventions for accelerating sustainable growth with available human and natural resource in the adopted villages. It also aims to create a virtuous cycle between the society and an inclusive university system by providing knowledge and practices for emerging professions and to upgrade the capabilities of both the public and the private sectors.

Vision: Unnat Bharat Abhiyan is inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions like IITs/NITs/Central Universities/IISERs/State universities and colleges to help & build the architecture of an Inclusive India.

Mission: The Mission of Unnat Bharat Abhiyan is to enable higher educational institutions to work with the people of rural India in identifying development challenges and evolving appropriate solutions for accelerating sustainable growth. It also aims to create a virtuous cycle between society and an inclusive academic system by providing knowledge and practices for emerging professions and to upgrade the capabilities of both the public and the private sectors in responding to the development needs of rural India.

Jyothi Engineering college is a self-finance college run by the archdiocese of Thrissur . In the scenario of higher education this institution is a leading one in the state with ample facilities in terms of human resource and infrastructure. In the area of social service as well the college has proved excellent spheres and Unnat Bharath Abhiyan is only one among them. it is a member in the UBA with number C-8003.the villages benefitted are **Panjal, Painkulam, Nedupura, Kilimangalam. Cheruthuruthy** spread in the two panchayaths ie **Vallathol Nagar and Panjal**

The complete area is thickly populated and density of wells are very high the area and hence there are various pollution problems which affect the traditional water sources like wells borewells etc Solid waste disposal is also a serious issue in the area since the land area occupied by each house is less . In order to give awareness to the people as well the concerned Govt officials in the area, this workshop is arranged as a joint activity of Unnat Bharath Abhiyan and Jyothi Enineering college and the details of which are furnished here. Health inspectors of state health department of both panchayath (all the five villages) were invited. In addition to that same category of people from the nearby areas are also invited to get their support in benefiting the area in this relevant field

The Brochure for the programme is appended as Appendix A

2. Background

There are about 60 lakhs of open wells existing in the state of Kerala. In addition to that huge number of borewells, tube wells etc are also in use. These traditional water sources are existing along with the other polluting sources of a house say excreta disposal systems, waste water disposal systems, solid waste disposal systems and similar type of other polluting sources. The land area occupied by a house is less due to the high density of population. This co – existence results in to contamination of many water sources and it is manifested in various forms. In all the studies it is confirmed beyond doubt that more than 80 % of the open wells contain coliform. Presence of Iron and low pH are also predominant water quality issues in urban areas of the state. Seldom Presence of organic matter is also observed along with other water quality issues. In order counteract this scenario awareness among the general public is a must and this workshop is oriented to this primary objective of training Govt officials to guide the people in this line. Since Jyothi Engineering college is having a tradition of long exposure with such issues through the activities of centre for water research and education (CWRE), we have determined to conduct this workshop. It is also proposed to have a WhatsApp group for dissemination of the acquired knowledge in future as a follow up action

3. Objective

Objective of the workshop is to improve the domestic water quality and sanitation condition in the area by training govt officials like health inspectors, junior health inspectors, officials of local self govt departments and local people etc who can guide people in the respective area to ensure proper household sanitation and better practice for maintaining water quality, By doing so we expect that such message will be communicated to all people and that will improve the condition in the surrounding area mainly the targeted five villages

4. Centre for Water Research and Education

Centre for Water Research and Education(CWRE) was established on 05-08-2016 as subsidiary of **Civil Engineering department Jyothi Engineering College, Cheruturuthy**. The centre aims at providing services to the people on remediation of various water issues such as water transmission and distribution, water quality, micro-irrigation systems, water flow measurement, rain water harvesting, water treatment and with special focus on maintenance of domestic water sources of Kerala. The centre maintenance an approved water testing laboratory with facilities for analysis of conventional water quality parameters. A panel of experts from the sector are assigned the job of clearing doubts of the people on various issues related to water. The work shop is arranged with the technical input from the CWRE as it is mainly aimed to fulfil the objective of CWRE

5. Programme schedule

The programme was arranged on 22.09 2023 and the venue is insight hall of Jyothi Engineering college. The programme was inaugurated by the president of Panjal panchath smt Thankamma in a function presided over by Nirmala Devi vice president Vallathol Nagar panchayath .Welcome speech was delivered by Dr Vincy verghese ,HOD civil department and. Felicitation speech was delivered by Fr Dr Jose Kannampuzha . Vote of thanks was proposed by Anna Joseph co-ordinator of the programme. Programme schedule is attached as appendix B

Dr Vincy Verghese HOD civil delivering the welcome address

Presidential address by Vice President Vallathol Nagar Grama Panchayat

Smt Thankamma President Panjal Panchayath inaugurating the programme

Fr Dr Jose Kannambuzha delivering the felicitation address

Vote of thanks by Smt Anna Joseph , Co -Ordinator

6. Co -Ordinator Participants and Faculties

The programme was formulated and implemented under the civil Engineering Department. Dr Vincy Varghese HOD civil department, took the lead in the process. Smt Anna Joseph and Smt Jeffy Johny, Assistant Professors in the department were assigned as Co-Ordinator and Asst co-ordinator of the programme

There were 60 participants for the programme which includes

Health inspectors – 4

Junior health inspectors – 28

Members of Friends of Bharathapuzha -3 villagers

Staff of Jyothi engineering College -12- staying in the village

Others – 14 – various categories of people beneficial to the villages

Faculties

The main faculties were Prof S.Rathish and Prof M.G.Cyriac. Those faculties were selected due to their long exposure in the field and the details are furnished below

Prof S Rathish

Former experiences are as follows

- Chief Engineer, Kerala Water Authority
- Director communication and capacity development WRD, Kerala state
- HOD civil Jyothi Engineering College
- Director operations, Kerala Rural Water Supply and Sanitation Agency
- Team leader Kerala Solid Waste Management Project

M.G.Cyriac

Former experiences are as follows

- Executive Engineer, Kerala Water Authority
- Director communication and capacity development WRD, Kerala state
- Associate Professor civil Jyothi Engineering College
- Manager Environmnet, Kerala Rural Water Supply and Sanitation Agency
- Environmental Safeguard expert Kerala Solid Waste Management Project
- Founder and Co-ordinator of Centre for Water Research Education, Jyothi Engineering College

Participants in the programme

View of the audience

Prof Rathish delivering his speech

Vote of thanks proposed by by Mrs Anna Joseph, Co – ordinator of the programme

List of participants are appended as appendix C

7. Subject Coverage and Materials Provided

The subject coverage was oriented in such a way that the final outcome is beneficial for the controlling of domestic pollution. We have also focussed on the Environmental planning of house and the surroundings. Various water treatment methodologies were discussed and introduced. Due to our continued effort in the field various typical water quality issues were identified are discussed. we have also focused on the environmental planning of house and the surrounding by considering the effect of air, sunlight, water, bacteria, earthworms, trees soil character etc on the well being of the residents in the house etc were discussed. the prominent water quality issues which we discussed is listed below

Water quality issues in Kerala State and remedial measures

Feed back

Feed back was taken from all the participants in the prescribed format given in appendix D. generally, the participants expressed happiness and satisfaction on the outcome of the workshop. Verbal feedback was also given many including Dr Anitha Jacob, Sri Mahesh of FOB , Vinod Health inspector , Kunnamkulam and health inspector Wadakkanchery and all of them appreciated the program .Interactions are also continuing with good result and feed back

8. Financial aspects of the Programme

Total expenditure for the programme comes to about Rs20872(Rs twenty thousand eight hundred and seventy-two)

9. Conclusion

The programme was effectively arranged and conceived. We have also arranged future plans to intensify the campaign on water quality and sanitation. The main target group of the programme was Health inspectors and junior health inspectors of health department to whom the people generally approach for such type of assistance. So we have charted out programmes for benefitting the general public of the area

LIST OF APPENDICES

ONLY FOR THIS DOCUMENT

1. Appendix A Brochure for the programme
2. Appendix B Programme Schedule
3. Appendix C List of participants
4. Appendix D Feedback form
5. Appendix E- WhatsApp group -weekly messages to the participants
6. Appendix-F Paper News

App A Brochure for the Programme

About the Workshop:
This is a workshop indented for the panchayath and health workers to know more about the
Course Content

- Water quality issues and remedies, current scenario in Kerala
- Household environmental planning of house and surroundings

Eligibility:
The panchayath members of the nearby panchayath, health Inspectors, Assistant Engineers, Faculty form AICTE approved institutions.

Facilities:
Lunch and refreshments will be provided.

Resource Persons:

- Sri. S. Rathish, Former chief engineer, Kerala Water Authority
- Prof. Cyiac M.G., Jyothi Engineering College, Kerala

Mentor:
Prof. Cyriac M.G., Associate Professor, CE Dept
UBA Co-ordinator.

Convenor:
Dr. Vincy Verghese , Head of Department, CE

Coordinators:

Ms. Anna Joseph Assistant Professor Dept. of Civil Eng. Email: annajoseph@jecc.ac.in Mob: 9400947041	Ms. Jeffy Johny Assistant Professor, Dept. of Civil Eng. Email: jeffyjohny@jecc.ac.in Mob:7025168862

One Day Workshop

on

Domestic Pollution and Remedial Measures

22nd August 2023

Organized by

उन्नत भारत अभियान
UNNAT BHARAT ABHIYAN

JYOTHI ENGINEERING COLLEGE
LEAD KINDLY LIGHT
CREATING TECHNOLOGY LEADERS OF TOMORROW
ESTD 2002

Department of Civil Engineering
(NBA Accredited)
Jyothi Engineering College
Cheruthuruthy, Thrissur, Kerala,India, 679531
https://www.jecc.ac.in/

Appendix B Programme Schedule
Programme Schedule

9.00 am	: Registration
9.30 am	: Inauguration
Welcome	: **Dr. Vincy Verghese,** HOD Civil Engineering
Presidential Address:	**Ms. Nirmala Devi**, Vice President, Vallathol Nagar Panchayath
Inaugural Address	: **Ms. V. Thankamma**, President Panjal Panchayth
Felicitation	: **Fr. Dr. Jose Kannampuzha,** Academic Director, JEC
Vote of thanks	: **Ms. Anna Joseph**, Asst. Professor Civil Engineering
10.00am-11.30 am	: Session by **Prof. S. Rathish** on, **"Water Quality Issues and Remedial Measures"**
11.30am-11.45am	: Tea Break
11.45am – 1.00pm	: Session by **Prof. M.G. Cyriac** on, **"Environmental Planning of House and Surrounding"**
1-1.15pm	: Discussion / Feedback Session
1.15pm	: Lunch
2.15-4.00pm	: Interaction among participants and students

Appendix C
List of participants

ഏകദിന ശില്പശാല

“ഗാർഹിക മലിനീകരണവും നിയന്ത്രണമാർഗ്ഗങ്ങളും“

Attendance sheet

22/08/2023

Sl. No.	Name	Designation	Mobile number	email id	Signature
1	Jincy K. K	JHI Gr II	9400512055	jincykakkassery1995@gmail.com	
2	Drishya. C	JHI Gr II	8075417027	drishyanarayanan555@gmail.com	
3	Arjun vasu.vc	JHI gr II	9567422302	vcarjunvasu@gmail.com	
4	Megha. M	JHI gr II	8129360490	meghaarun_m94@gmail.com	
5	SHAHINA . P.A	JHI gr II	6238506974	Jhishahinaaneesh@gmail.com	
6	Chinju Raj	JHI gr II	8086852627	rajchinjuraj@gmail.com	

Sl. No.	Name	Designation	Mobile number	email id	Signature
7	LEENESH.V	JHI Gr I	9947909301	leeneshvijayan@gmail.com	[illegible]
8	P. Nirmala Devi	Vice President Vallithol	9947789776		[illegible]
9	BEENA.V	JHI Gr I	7994113262		Beena
10	Parithran.N.U	JHI Gr I	9846856801		[illegible]
11	Nihala.TT	JHI GrII	7909182126		[illegible]
12	Anagha.S.B	JHI Grade II	9207776074		Anagha
13	Antony Thomas	JHI Gr I	9847038044		[illegible]

Sl. No.	Name	Designation	Mobile number	email id	Signature
14	ANEESHA.T	JHI GR II	9447748245	aneesha.krn@gmail.com	[illegible]
15	Santhimol.S	JHI Gr II	8086231004	santhisasidharan10@gmail.com	[illegible]
16	Raghu Ram.A.M	Friends of Bharathapuzha	9447135737	raghuramakampilly@gmail.com	[illegible]
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18	Anitha Jacob	Lecturer - Civil GPC Chelakkara	9447092923	newanithajacob@gmail.com	[illegible]
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45	PRANIN. K. DAVIS	Health inspector Govt Panjal GP	9400324587	PRANINKDAVIS@GMAIL.Com	
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60	Soorya. M. Nair	AP, CE	9446462033	sooryamnair@jecc.ac.in.	

Appendix D- Feedback form

उन्नत भारत अभियान

शिक्षा मंत्रालय, भारत सरकार का एक प्रमुख कार्यक्रम

UNNAT BHARAT ABHIYAN (UBA)

a flagship program of Ministry of Education (MoE), GOI

शिक्षित भारत-स्वस्थ भारत- स्वच्छ भारत- स्वावलंबी भारत- संपन्न भारत

सत्यमेव जयते

Feedback form

ഏകദിന ശില്പശാല

ഗാർഹിക മലിനീകരണവും നിയന്ത്രണമാർഗ്ഗങ്ങളും

പേര്:

1. ഈ പരിപാടി നിങ്ങൾക്ക് ഉപകാരപ്രദമായോ? അതെ ◯ അല്ല ◯
2. ഈ പരിപാടിയിൽ ഉൾപ്പെടുത്തിയ ക്ലാസ്സുകൾ വ്യക്തമായോ?
   അതെ ◯ അല്ല ◯
3. ഈ പരിപാടിയിൽ നിങ്ങളുടെ പ്രതീക്ഷ എന്തായിരുന്നു?
4. ഈ പരിപാടി നിങ്ങളുടെ പ്രതീക്ഷക്കനുസരിച്ചായിരുന്നോ ?
   അതെ ◯ അല്ല ◯
5. ഈ പരിപാടിയിൽ നിന്നും നിങ്ങൾക്ക് മനസിലായത് എന്ത്?
6. ഇനിയും ഇത് പോലെയുള്ള ക്ലാസ് ഉപകാരപ്രദമായിരിക്കുമോ ?
   അതെ ◯ അല്ല ◯

സഹ് ഹൈസ്കൂളിലെ വിദ്യാർഥി കളായ ഉബൈദും ഹമീസും സ ഹോദരങ്ങളാണ്.

ദിനേഷ്, മേഖല സെക്രട്ടറി പി. ആർ.കൃഷ്ണകുമാർ, മേഖല പ്ര സിഡന്റ് അബ്ദുൾ ഖാദർ തുടങ്ങി

യവർ ഉദ്ഘാടനം ചെയ്തു. സി പിഎം ചേലക്കര മണ്ഡലം കമ്മി റ്റി അംഗം പി.ആർ.വിശ്വനാഥൻ,

മത്തായി തുടങ്ങിയവർ പ്രസം ഗിച്ചു.

ജ്യോതി എൻജിനീയറിംഗ് കോളജിൽ ഉന്നത ഭാരത് അഭിമാനിന്റെ നേതൃത്വത്തിൽ നടത്തിയ ഏകദിന ശില്പശാല പാഞ്ഞാൾ പഞ്ചായത്ത് പ്രസിഡന്റ് വി. തങ്കമ്മ ഉദ്ഘാടനം ചെയ്യുന്നു.

ഉന്നത ഭാരത് അഭിമാനിന്റെ നേതൃത്വത്തിൽ ഏകദിന ശില്പശാല

തൃശൂർ: ജ്യോതി എൻജിനീയറിംഗ് കോളജിൽ ഉന്നത ഭാരത് അഭിമാനിന്റെ നേതൃത്വത്തിൽ ഗാർഹിക മലിനീകരണവും നിയന്ത്രണ മാർഗങ്ങളും എന്ന വിഷയത്തിൽ ഏകദിന ശില്പശാല നടത്തി. പഞ്ചായത്ത് മുനിസിപ്പൽ ജീവനക്കാർക്കു വേണ്ടിയാണ് ശില്പശാല സംഘടിപ്പിച്ചത്.

പാഞ്ഞാൾ പഞ്ചായത്ത് പ്രസിഡന്റ് വി. തങ്കമ്മ ശില്പശാല ഉദ്ഘാടനം ചെയ്തു. വള്ളത്തോൾ നഗർ പഞ്ചായത്ത് വൈസ് പ്രസിഡന്റ് നിർമല ദാസ് അധ്യക്ഷത വഹിച്ചു. ജലത്തിന്റെ പരിശുദ്ധിയും പ്രതിവിധിയും എന്ന വിഷയത്തിൽ പ്രഫ. എസ്. രതീഷും വീടിന്റെ പരിസരത്ത് പരിസ്ഥിതി പ്ലാനിംഗിനെ കുറിച്ച് പ്രഫ. എം.ജി. സിറിയക്കും ക്ലാസ് എടുത്തു.

ജ്യോതി എൻജിനീയറിംഗ് കോളജ് അക്കാദമിക് ഡയറക്ടർ റവ. ഡോ. ജോസ് കണ്ണമ്പുഴ, സിവിൽ വിഭാഗം മേധാവി ഡോ. വിൻസി വർഗീസ്, അസി. പ്രഫ. അന്ന ജോസഫ് എന്നിവർ പ്രസംഗിച്ചു. ജ്യോതി എൻജിനീയറിംഗ് കോളജ് സിവിൽ വിഭാഗത്തിന്റെ നേതൃത്വത്തിലാണ് ശില്പശാല സംഘടിപ്പിച്ചത്.

ജ്യോതിയിൽ ശില്പശാല

തൃശൂർ: ജ്യോതി എൻജിനീയറിങ് കോളേജിൽ ഉന്നത ഭാരത് അഭിമാനിന്റെ നേതൃത്വത്തിൽ ഗാർഹിക മലിനീകരണവും നിയന്ത്രണ മാർഗങ്ങളും എന്ന വിഷയത്തിൽ ഏകദിന ശില്പശാല നടത്തി. പഞ്ചായത്ത് മുനിസിപ്പൽ ജീവനക്കാർക്കു വേണ്ടിയാണ് ശില്പശാല സംഘടിപ്പിച്ചത്. പാഞ്ഞാൾ പഞ്ചായത്ത് പ്രസിഡണ്ട് വി. തങ്കമ്മ ശില്പശാല ഉദ്ഘാടനം ചെയ്തു. വള്ളത്തോൾ നഗർ പഞ്ചായത്ത് വൈസ് പ്രസിഡണ്ട് നിർമ്മല ദാസ് അധ്യക്ഷത വഹിച്ചു. പ്രൊഫ. എസ് .രതീഷ്. പ്രൊഫ. എം. ജി. സിറിയക് എന്നിവർ ക്ലാസെടുത്തു.

ജ്യോതി എൻജിനീയറിങ് കോളേജ് അക്കാദമിക് ഡയറക്ടർ റവ. ഡോ.ജോസ് കണ്ണമ്പുഴ , സിവിൽ വിഭാഗം മേധാവി ഡോ. വിൻസി വർഗീസ്, അസിസ്റ്റന്റ് പ്രൊഫ. അന്ന ജോസഫ് എന്നിവർ സംസാരിച്ചു. ജ്യോതി എൻജിനീയറിങ് കോളേജ് സിവിൽ വിഭാഗത്തിന്റെ നേതൃത്വത്തിലാണ് ശില്പശാല സംഘടിപ്പിച്ചത്.

ജ്യോതി എൻജിനീയറിങ് കോളേജിൽ നടന്ന ഏകദിന ശില്പശാല പാഞ്ഞാൾപഞ്ചായത്ത് പ്രസിഡണ്ട് വി. തങ്കമ്മ ഉദ്ഘാടനം ചെയ്യുന്നു

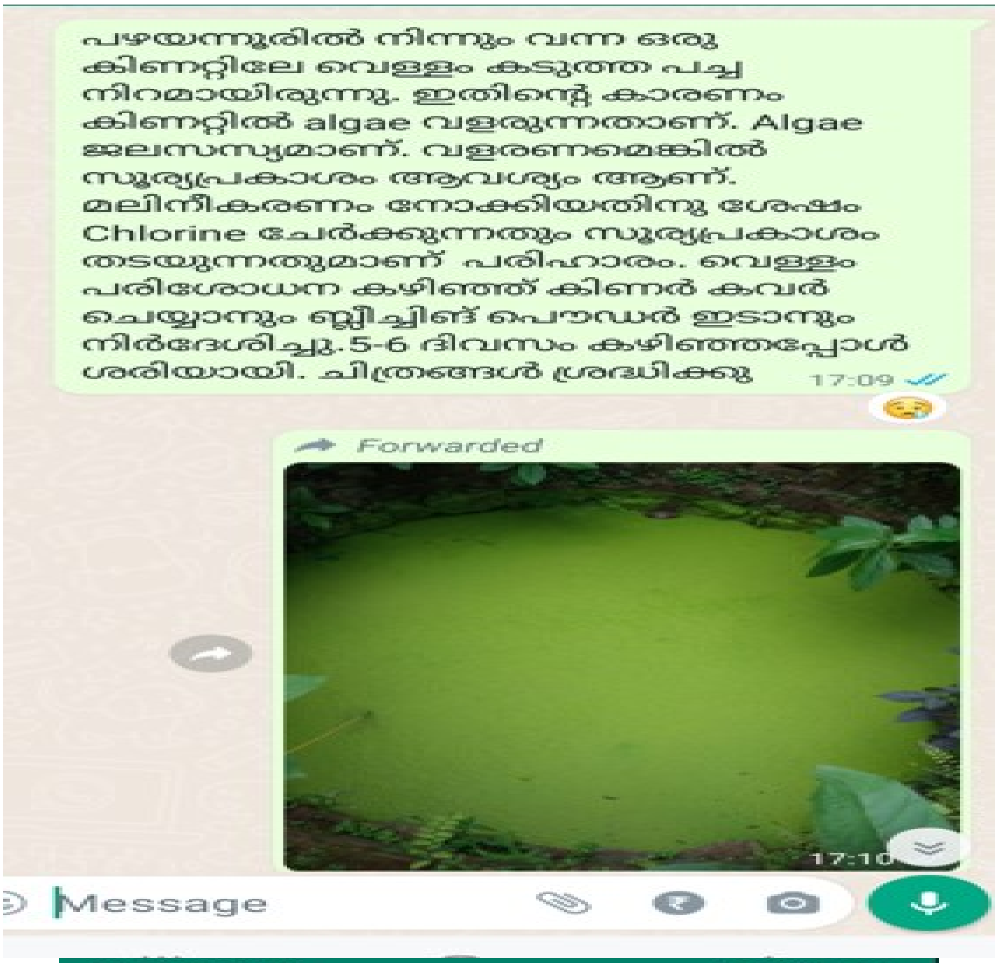
Appendix E
WhatsApp group -weekly messages to the participants

Group was formed with the participants who are interested and willing with group name **Silpasala -Unnat Bharath Abhiyan and Jyothi Engineering College** . The sole purpose of this group is to communicate water quality and sanitation related subjects to the group members so that they can communicate the same to the villagers. Few of such messages are given below for reference

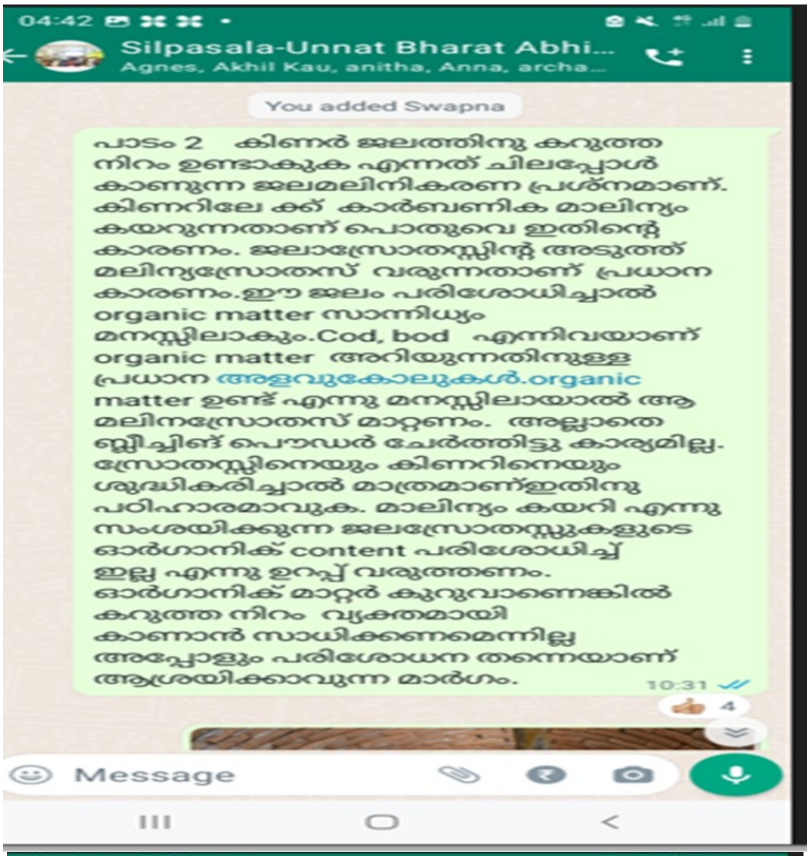
Details from whatsap message to the participants on water quality and sanitation

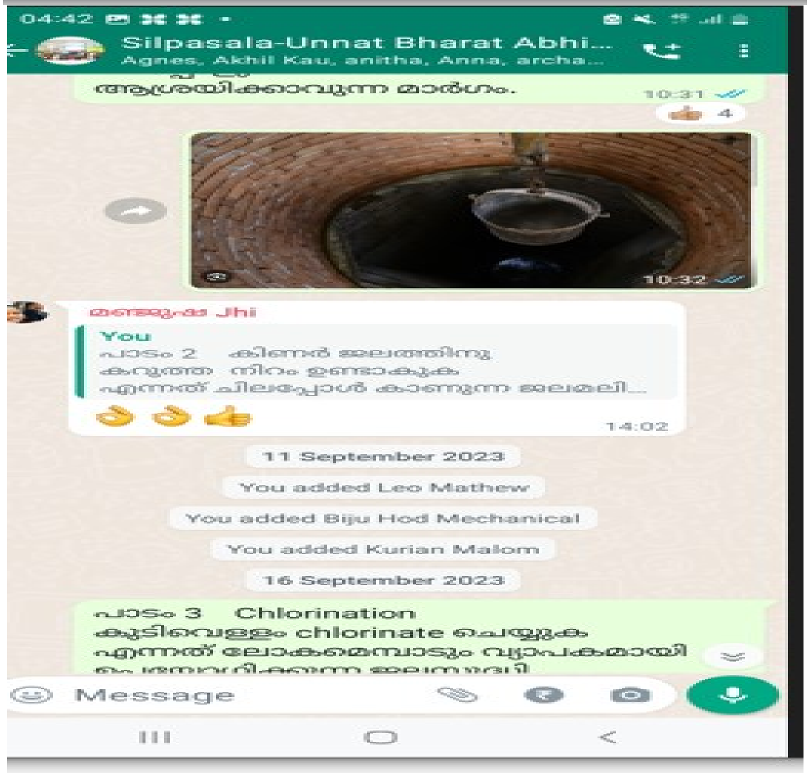
Message 1 on 6 September 2023

Message on 6 September 2023

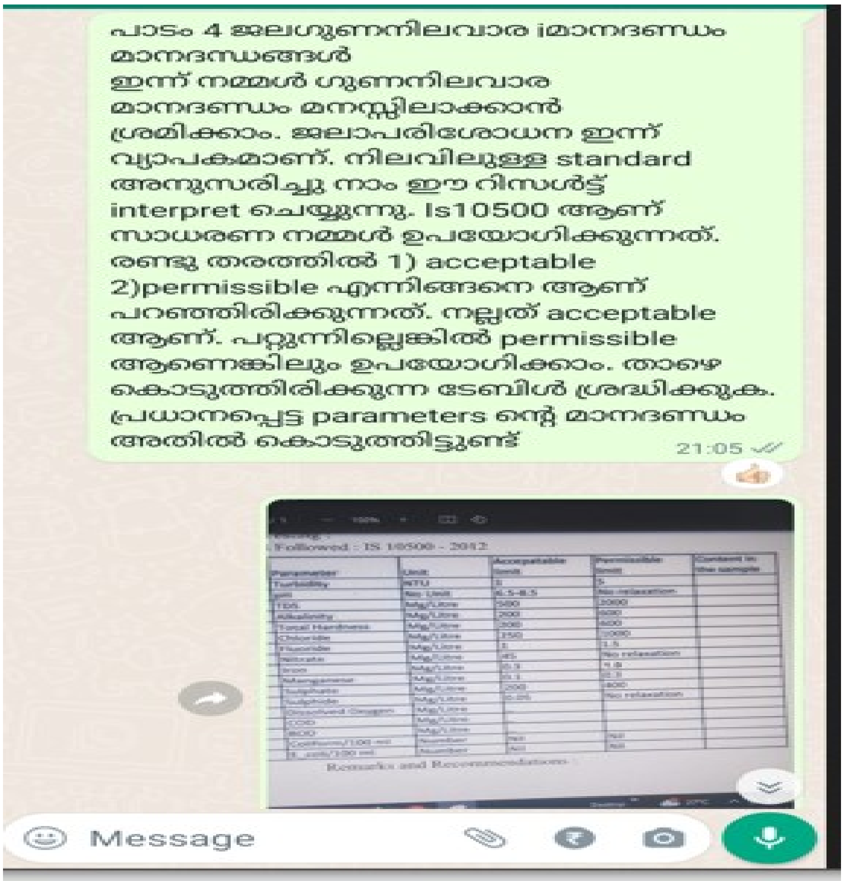


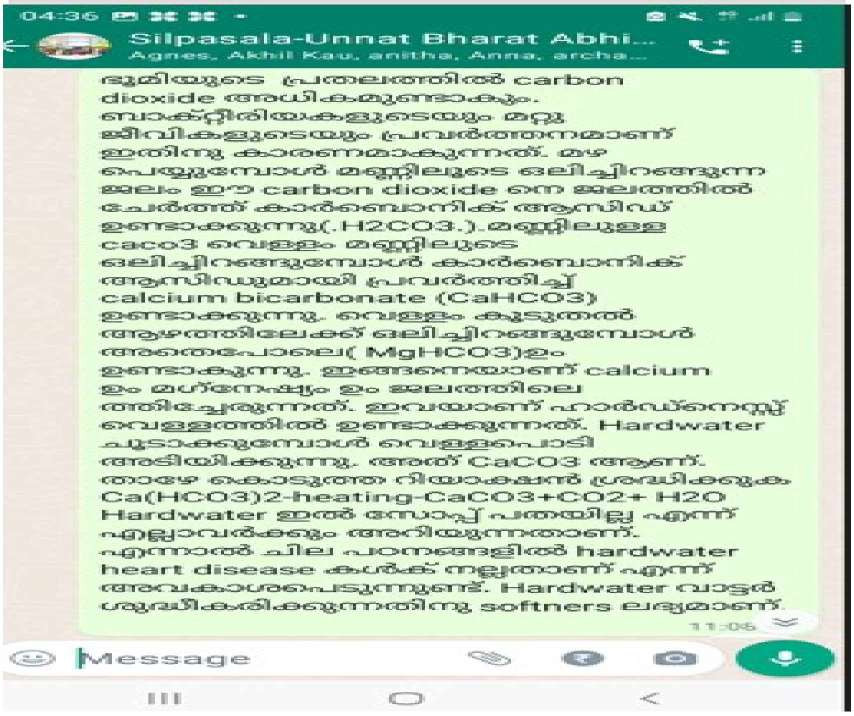
Message on 10th September 2023





Message on 22 September 2023





Appendix F

Question Paper for water quality awareness competetion

CWRE & ISTE student Chapter, Jyothi Engineering College

Water Quality Awareness Competition

Date 14.2.2025

Time 45 minutes

Note: - No negative marks

Starred (*) questions will have more weightage when there is need for a tie-breaker

General information Instructions

a) Water quality deterioration is the most catastrophic situation in modern world. It is postulated that 50 % of hospital beds are occupied by patients suffering from water related diseases

b) The objective of this endeavour is to increase the water quality awareness of the people

Instruction for the exam

c) Select the best answer out of the given four

d) Answer sheet only need be handed over to the invigilator. Question paper can be taken away by the participant

e) Time management will be crucial

f) Key for the answer will be published within 1 hour on completion of the exam

g) One week time will be given for challenging the key

h) Result will be published within 2 weeks thereafter

i) Prizes will be awarded on a suitable occasion in the college ie world water day etc

j) Certificate will be given only those registered and written the exam

k) No claim for refund of registration fee will be entertained under any circumstances

1. Eutrophication in rivers is caused by

a) discharge of sediment in to the river b) excessive discharge of nutrients c)

discharge of chlorides e) discharge of toxic substances

2.Which of the following are the primary causes of water pollution?

(a) Plants(b) Animals(c) Human activities(d) None of these

3.Which of the following techniques is used for reducing the total dissolved solids (TDS) in the water?

(a) Osmosis(b) Ion exchange(c) Distillation(d) Both b and c

4.Which of the following techniques is normally used to remove fluorides in drinking water?

(a) Osmosis(b) Reverse osmosis (c) Activated alumina (d) Both b and c

5.Which of the following is a waterborne disease?

(a) Typhoid(b) Cholera(c) Diarrhoea(d) All of the above

6. In most freshwater lakes, the algal productivity is limited by the availability of which of the following inorganic ions?

(a) Carbon (b) Nitrogen(c) Phosphorus (d) b and c

7. The characteristics of fresh and septic sewage respectively are

a) Acidic & Alkaline b) Alkaline & Acidic c) Both acidic d) Both Alkaline

8.Which of the following is the main cause of temporary hardness?

(a) Calcium sulphate(b) Magnesium sulphate(c) Magnesium chloride

(d) Magnesium carbonate

9. Which of the following units is used for measuring the turbidity of water?

a) mg/litre (b) centimetre (c) NTU (d) All of the above

10 .Which of the following is not a waterborne disease?

(a) Measles(b) Typhoid(c) Cholera(d) Hepatitis

11. As the water quality index (WQI) of a stream improves, the biodiversity

a. increases b. decreases c. remains the same d. No effect

12 Hardness in water is generally represented by the amount of…

a) Ca2+ b) Zn2+ c) Mg2+ d) Both a and c

13. What percent of earth's total global water is approximately freshwater?

a.) 67.9% b.) 4.8% c.) 2.5% d.) 98%

14. Which method is commonly used to measure turbidity in water samples?

a) Spectrophotometry b) Gravimetric analysis c) Nephelometry d) Titration

15. Which of the following is not a standard parameter to assess the drinking water quality?

a) Total coliforms b) alkalinity c) Turbidity d) Methane concentration

16. Which analytical technique is commonly used to detect and quantify sodium and potassium in water samples?

a) Chromatography) Infrared Spectroscopy) Flame Photometry) Electrochemical analysis

17. Which water quality parameter needs to be analysed in situ only?

a) pH b) Temperature c) Turbidity d) Conductivity

18. Colour of water sample is measured in __________unit.

a) mg/lb) Hazen c) NTU d) mho/cm

19. What is the acceptable limit of E. coli or thermotolerant coliform bacteria in all water intended for drinking as per the Indian Standards of Drinking Water (IS: 10500:2012; Second Revision: 2015)?

a) 0 CFU/100mlb) 100 CFU/100mlc) 1 CFU/100mld) Undetectable/100ml

20. The Biological oxygen demand measures the

a) Amount of oxygen required for chemical reactions in wastewater

b) Amount of oxygen required for growth of microorganisms in water

c) Amount of oxygen required to oxidize the calcium present in wastewater) Amount of oxygen that would be removed from the water to oxidize pollution

21. Conductivity of the water sample is measured in __________unit.

a) mg/lb) Hazen c) NTU d) mho/cm

22. What would be the pH of a solution with a hydroxide ion [OH–] concentration of 10^{-8} M?

a) pH 2 b) pH 6 c) pH 8 d) pH 10

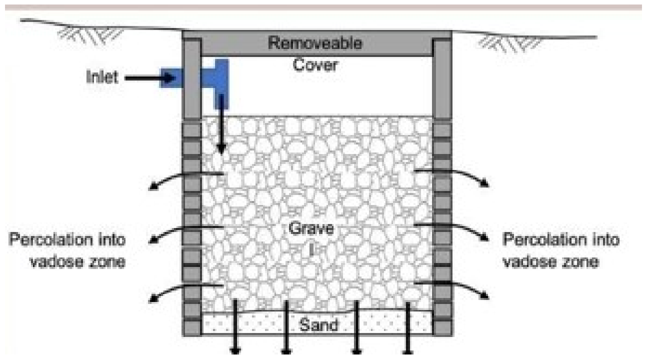
23. What is the full form of GAP?

a) Ganga action pre distribution b) Ganga action plan c) Ganga affected plan d)Ganga Authority plan

24.As per the government rules an excreta disposal system is to be located at how much distance from the well-used for drinking

a) 14meter b) 20 meter c) 10meter d) 7.5 meter

25. Name of the structure given below is soak pit. what is the use of it ?



a) Disposal of waste water b) Disposal of solid waste c) Disposal of septage d) all of the mentioned

26. Trees around houses are beneficial due to

a) Shade b) absorption of CO_2 and release of Oxygen c) fertilization of soil c) none

27. Black colour in well water is due to

a) organic matter b) chloride presence c) nitrate d) iron

37. Identify the correct relation between the following?

a) Dissolved solid = Total solid + Suspended solid b) Dissolved solid = Total solid – Suspended solid c) Total solid = Dissolved solid / Suspended solid d) Dissolved solid = Suspended solid – Total solid

38. Which coagulant is mainly used for water treatment?

a) chlorine b) copper sulphate c) Aluminium sulphate d) none of the above

39. Chloride concentration in drinking water will be more in.

a) rural area b) urban area c) coastal area d) none of the above

40) Cholera is a dreadful disease. Which bacteria is responsible?

a) bacillus b) staphylococcus c) Vibrio d) none

41) Consumption of arsenic containing water results is

a) Keratosis b) blue baby syndrome c) cholera d) none

42. Name the Indian born British doctor who discovered that malaria is transmitted through mosquito

b) a) Robert Koch b) Ivanosky c) louis paste d) Ronald ross

43. What is WHO standard for chemical oxygen demand

a) 20mg/litre b) 10mg/litre c) 5mg/litre d)nil

44. pH of a water sample is 5.9 is it acceptable for drinking

a) Yes b) No

45. It is observed that certain vessels in a household is getting corroded fast

a) high pH b) low pH c) excess presence of iron d) b and c

46. Water tank over a house for drinking should not be kept open due to

a) algae growth b) entry of birds c) lack of aeration d) a &b

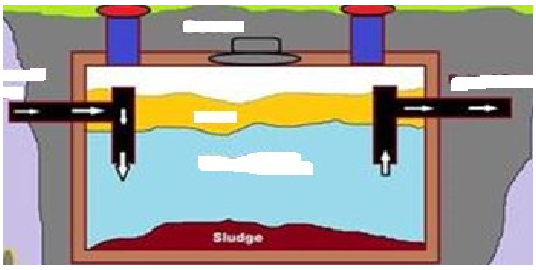
28.The figure below shows symptom of which disease

a) Keratosis b) fluorosis c) methemoglobinemia d) leptospirosis

29.The child below is affected by blue baby syndrome. Which salt is responsible for that ?

a) chloride b) fluoride c) Nitrate d) none of the above

30 What is the name of the structure given below



a) Sanitary pit b) Leach pit c) Septic tank d)None

31 *Name the popular scientist who dedicated his effort for protection of human health by continuous research

a)Ronald ross b) Louis paster c)Antony Leevanhalk d)Alexander fleming

32. The picture below is a water treatment system ? what is its the most appropriate name

a) Sand filter b) activated carbon filter c) pressure filter d) Purolite filter

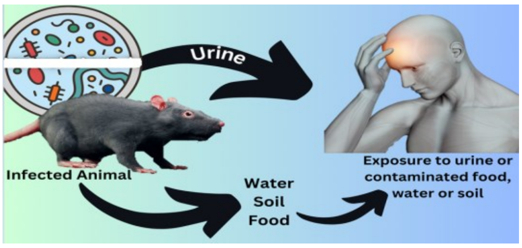
33.What is the name given for the water treatment system used in Africa?

a) water filter b) carbon filter c) LifeStraw d) none

34) Below given photo is of popular scientist in water sector namely SPL Sorenson. His contribution related to what?

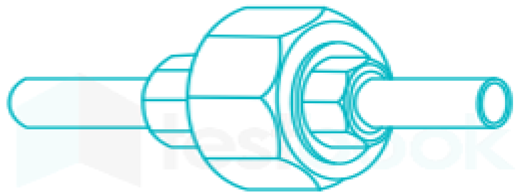
a) bacterial analysis b) pH meter c) water treatment systems d)all mentioned

35)The below picture gives the cause for a particular dangerous disease name it.



a) Dengue fever b) leptospirosis d) vomiting e) tuberculosis

36) Name the pipe fitting given below



a) Elbow b) union c) coupling d) valve

47. A water tank is having a size of 10.5mx4.8m x 3m with a freeboard of 0.5m. Find the capacity in litres

A) 126000 b) 151200 c)150000 d) none of the above

48) Pressure pump in household work is required

A) Decrease pressure b) Increase pressure c) control pressure alteration d) measure the pressure

49) Salty taste for water is due to presence of

a) nitrate b) chloride c) sulphate d) iron

50) Chlorination of water supply is essential for ………………

a) oxidation of organic matter b) disinfection c) reducing metals d) none

51) Hardness is caused by………………..

a) Multivalent metallic cations b) calcium C) magnesium d) calcium and magnesium

52) Who discovered virus?

a) Louis paster b) Robert Koch c) Ronald Ross d) Ivanosky

53) Conductivity of water depends on the ………………..

a) Dissolved ions b) Suspended and dissolved ions c) Suspended ions in water d) none of the above

54)Who invented microscope ?

a) Antony van leevanholk b) Ronald rossc) arrehenius d) henry cavendish

55) National green tribunal(NGT) is formed for?

a) Protecting forest resources b)protecting rivers c) protecting environment and natural resources d) all of the above

56) Decrease in pH Value can be accomplished by adding ……………….

a) Nitric acid b) NaOH c) lime d) KOH

57) Acceptable quality standard for chloride in mg/litre is

a) 250 b) 300 c) 200 d) none of the mentioned

58)Treatment for algae growth in wells is

a) Copper Sulphate b) prevention of sunlight c) both of the mentioned d) None of the mentioned

59) Chlorine demand can be reduced by treatment of water

a) Yes b) No

60) Isotherm is a term associated

a) Activated carbon b) pH of water c) conductivity of water d) sand filter for water

61) Theory of ionization was invented by …………………..

a) Arrhenius b) Henry Cavendish c) Ronald ross d) Antony Levonchuck

62) Eutrophication is caused in rivers by discharge of ……………

a) discharge of sediment in to the river b) excessive discharge of nutrients c) discharge of chlorides e) discharge of toxic substances

63) Which is the latest Indian standard that describes water quality ?

a) IS10500-2016 b) IS10500-2012 c) IS10500-2014 d) IS10500-2015

64) The maximum permissible presence of chloride in drinking water in the absence of other sources is…………………….

a)1500mg/litre b) 2000mg/litre c)1000mg/litre d) 2500mg/litre

65)Which of the following salts is the main cause of permanent hardness of water?

(a) Magnesium sulphate(b) Magnesium bicarbonate(c) Magnesium carbonate(d) None of the above

66. What is the main objective of artificial recharging?

a) To increase the water availability in water sources b) to reduce the contamination of traditional water sources c) To satisfy the existing rules and regulations d) none

67. Organic matter in water cannot be estimated by ……………….

a) COD test b) BOD Test c) TOC Test d) conductivity test

68. What is the minimum quantity of residual chlorine that should be present in water supply

a) 0.3mg/litre b)0.2mg/litre c) 1 mg/litre d) 0.8mg/litre

69. Smell of rotten egg is due to …………..

a) Hydrogen chloride b) hydrogen sulphate c) hydrogen sulphide d) hydrogen

70. In a conventional water treatment plant slow mix is performed in which part

a) Clarifier b) Flocculator c) aerator d) none of the mentioned

71. When chlorine gas is added to water pH will …………..

a) increase b) decrease c) No effect d) none

72. Suitable pH for coagulation to occur is …………

A)6-8 b)4-5 c)9-10 d) 4.5 - 5.5

73. What is the normal contact period given for chlorination of water?

a) 120 minutes b) 10 minutes c) 30 minutes d) 60 minutes

74. Chlorine demand for distilled water is 1 mg/l

The above statement is a) true b) false

75. In a water sample chlorine demand is 0.8mg/litre and residual of 0.2 is to be maintained. What is the requirement of bleaching powder 10000 litres of water that contains 30% chlorine?

a) 0.33 kg b)0.8kg c) 0.2 kg d) 1.0 kg

76. The government department basically responsible to take steps for controlling domestic pollution is ……………….

a) Police department b) pollution control board c) Health department d) local self-government département

77. Which is not an Alkalinity form?

a) carbonate b) bicarbonate c) hydroxide d) chloride

78. Volatile solids represent …………….

a) inorganic solids b) organic fraction c) both d) none

79. Permissible water quality standard for nitrate in mg/litre is…………………..

a) 45 b) 100 c) 125 d)55

80. Permanent hardness can be removed by……………

a) Boiling b) Softener c) Alum d) Lime

81. What is the source of Dissolved Oxygen in water ?

a) from ground b) atmosphere c) from living organisms d) none

82. What is the permissible limit for fluoride in drinking water in mg/litre ?

a)1 b)1.5 c)2 d) 1.8

83. Colour change in bathroom floors is due to …………..

a) chloride b) iron c) nitrate d) phosphate

84. What is the hydrogen ion concentration in moles /litre if pH is 5.6?

A)10^{-3} b) $10^{-5.6}$ c) $10^{-4.4}$ d) $10^{-9.4}$

85. What is the effect of temperature on conductivity of water ?

A) increase b) decrease c) remains same d) none

86. Smell in water sample is generally associated with ……………..

A) Chloride b) nitrate c) sulphate d) hardness

87. White deposit on boiling water indicates presence …………..

A) Iron b) hardness c) chloride d) nitrate

88. What is the important health significance of hardness?

A) on boiling white deposit is deposited b) hard water is good for heart diseases c) lather is formed with soap d)scaling in boilers

89. Approximate quantity of dissolved oxygen in mg /litre in drinking water is around ……

A) 5 b) 7 c) 9 d)8

90. When iron containing water is used for preparation of tea black colour is formed due to

a) tannin in tea b) oxidation of ferric to ferrous c) due to mud in iron d) oxidation of ferrous to ferric

91. Iron is having similarity with the following mineral in character …….

A) magnesium b) nitrate c) manganese d) chloride

92. In a water treatment system fluoride removal is normally ascertained by ………..

a) Sand filter b) activated carbon filter c) Reverse osmosis d) none

93. pH values of shallow well water is normally --------- compared to deep well

A) Low b) high c) equal d) no relation

94. Organic pollution in water can be reduced by ………

A) Filters b) activated carbon c) bacterial treatment d) none

95. Acceptable standard for sulphate in mg/litre

A)400 b)200 c)250 d) 450

96. Permissible limit for hardness in mg/litre

A)500 b) 600 c) 700 d) 650

97. Drinking water quality standard in India is proclaimed by ….

A) Central Pollution control board b) BIS c) NEERI Nagpur d) CWPR

98.Which of the following is not a water borne disease?

a) Dysentery b) Cholera c) Typhoid d) Malaria

99. Best quality pipe presently used in water supply system

A) PVC b) Cast-iron c) Ductile iron d) HDPE

100.For deep water pumping what type of pump is used

a) centrifugal pump b) submersible pump c) Rotatory pump d) HT pump

Appendix F
Water quality reports to various organizations

Water quality reports were given to various organization

- NARIP Cheruthuuthy
- Pollution of well -Propsal for remedy -R.C church Cheruthuruthy
- Inspection Report of Water Sources in GUPS Painkulam
- Proposal given to MOEF for proposal for policy amendment of govt of India

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STUDY ON

Water quality issues and remedial measures in

National Ayurveda Research Institute for Panchakarma, Cheruthuruthy

By

Centre for Water Research and Education (CWRE),

Jyothi Engineering College,

Cheruthuruthy

Jyothi Hills

Dated 28-3-2024

Introduction

Vide the mail dated 27.3.2024 , Director National Ayurveda Research Institute for Panchakarma, Cheruthuruthy (NARIP) has requested Jyothi Engineering college to study the water quality issues in their institute and suggest remedial measures . There was also earlier oral request to clarify the various aspects regarding this issue . Since NARIP is a regular customer of our Institute and also considering the public interest involved, we have forthwith taken up the assignment. The objective of our study is to suggest remedies for the prevailing water quality issues in NARIP) and forward a report for proposing remedial measures to ensure safe and potable water to the institute

Centre for Water Research and Education (CWRE) is a system under the civil department of Jyothi Engineering College which take up such assignments. Centre maintains a government approved laboratory and allied facilities for helping people to get rid of water related issues to the traditional water sources , which at present is common in various parts of our state

Analysis of water samples were held and the Co-ordinator Centre for Water Research and Education (CWRE)visited the institute on 26.3.2024 for gathering information and discussed with the officials of NARIP ..

Description of the issue

First indication of the problem has been presence of lather in the water surface of well-1. The water sample was analysed for conventional water quality parameters and result appended as (Appendix A. It is observed that the Chemical Oxygen Demand was 15.2 mg /litre but the other tested parameters are generally OK . This apparently shows organic pollution of the water source. Another water sample was also taken on 25.3.2024 from the same well and upon analysis a Chemical Oxygen Demand of 10.2 mg/litre was observed. (Result appended as appendix B)

The undersigned inspected the site on 26.3.2024 and observed that water in well no1 is having black colour confirming the presence of organic matter but the polluting sources could not be identified. The well is located in the middle of various

buildings and the possibility for intrusion of waste cannot be overruled. The undersigned also inspected the surrounding area and observed that another well is existing nearby which is numbered as well 2. Please see the photo for identification. The quality of that well water was also tested in our laboratory. Result is appended as appendix C. There was also small amount of chemical oxygen demand ie 8mg/litre but the other parameters are OK. On enquiry it is gathered that well no 2 has not been in use for a pretty long period. There are leaves inside the well from nearby area which may be a reason for the observed presence of Chemical Oxygen Demand (organic Pollution)

Well no 1 – the well which is of normal use

Well no 2- well located in the Nearby area

Remedial measures Suggested

- Institute is located on the bank of Bharathapuzha and normally water may not be an issue at all
- The pollution in well no 1 is either due to intrusion of waste in to the well or due to spillage of waste in to the well
- If it is spillage slow rate dewatering will improve the condition which can be attempted
- If it is intrusion of waste from any nearby sources, the only alternative is to identify the source and remove it . If that be the case chlorination of the well is also compulsory after removing the polluting source
- Well, no 2 can be used only after cleaning the well and testing the water sample and confirming its suitability
- As an alternative, the possibility to use available borewell water may be considered. It is learned that sufficient water is available in the borewell. It is gathered that now the borewell is pumped only for 4 hours. So possibility of using borewell water to the complete institute by increasing pumping time and providing additional plumbing works is to be explored
- The institute should compulsorily procure a chlorinator and chlorination of water should always be ensured. It may not be very costly less than Rs 20,000
- Disposal of waste water and solid waste should be done effectively to protect water sources

Signed by

PROF CYRIAC.M.G

Dept of Civil Engineering
Jyothi Engineering College

Pollution of well -Propsal for remedy -R.C church Cheruthuruthy

Remedial measure for the water pollution problem in Roman Catholic Church Cheruthuruthy is

Introduction

Well is in a pollutted condition
On analaysisi it is observed that the well water contains
Chemical Oxygen demand -18mg/litre
Coliform presence is – 24nos/100ml
Iron presence is – 0.42mg/litre
Turbidity 10.4 Ntu
Test result attached

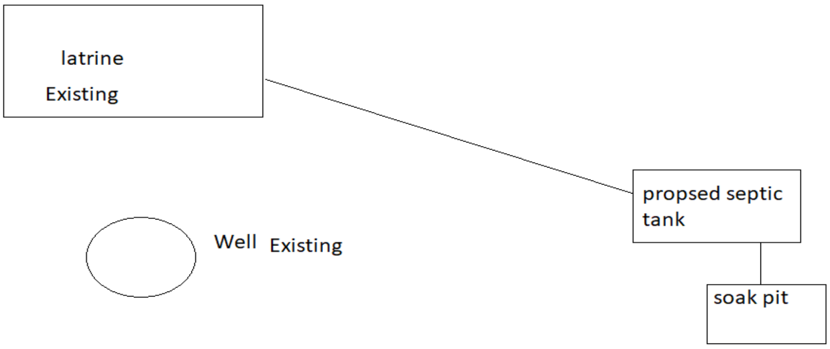
The above parameters indicate polluted well and remedies are to be done forthwith Latrine is positioned up land of the well at a short distance. It is confirmed beyond doubt that intrusion of waste water in to the well from the latrine septic tank and that is happening and hence the above test results

There are two options for this

Option 1 Construct a new latrine away from the well possibly low land

Option2

a) Construct a new septic tank for the in a position as shown in the figure given below so that the waste disposal is at a lower level than the well and the latrine building can be maintained as such
b) Construct the soak pit properly so that waste water is disposed effectively
c) Septic tank can be constructed in site or ready made



Proposed position of septic tank and Soak pit

Soak Pit

The Soak Pit which is also called the soakaway or soakage pit is a closed rectangular or circular, covered-up construction with porous or perforated walls, which is connected to the primary treatment unit or directly connected to the washroom and even some specific types of toilet.

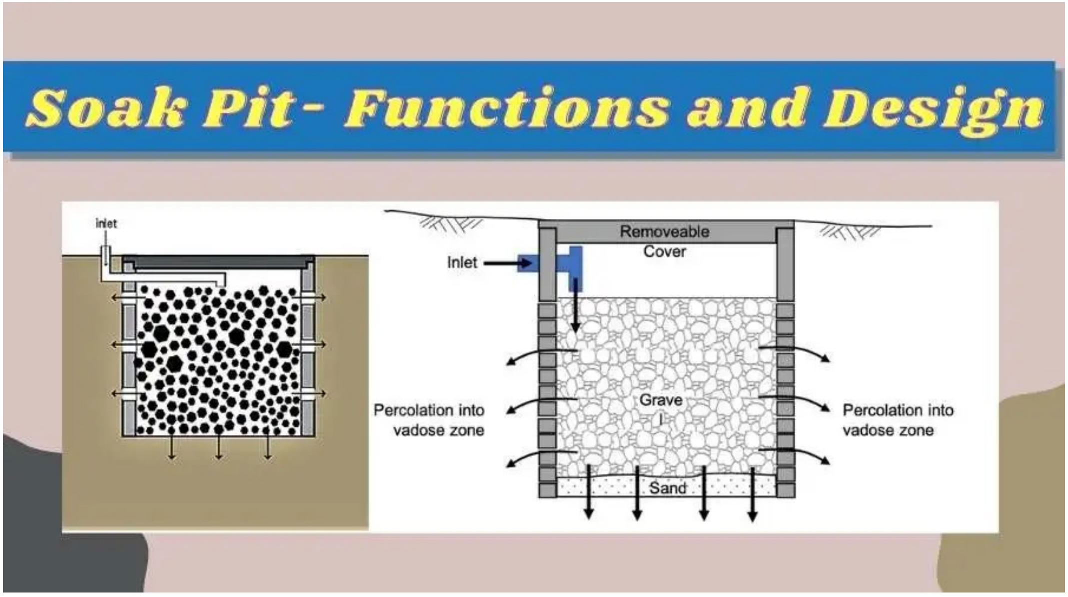
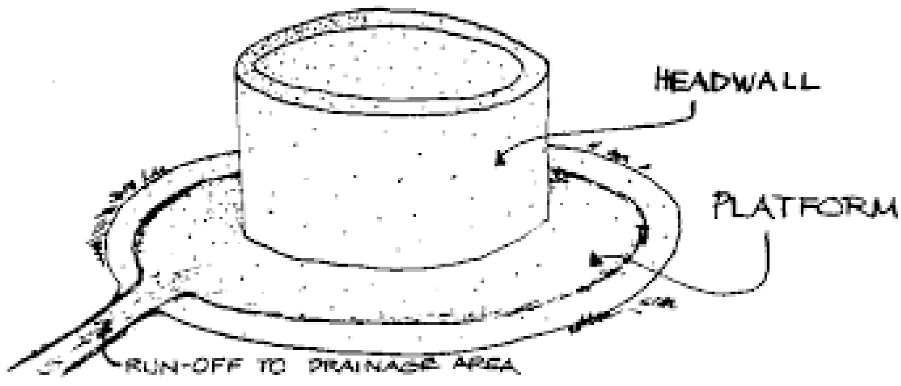


Fig2 soak pit

1) Maintain the well properly. Construct platform around the well so that there is no direct intrusion of rain water in to the well



Platform for open wells

Conclusion

The proposed remedies are inevitable. There is no scope for any relaxation

Inspection Report of Water Sources in GUPS Painkulam

Inspection team comprises of

1) Prof .M.G.Cyriac,Civil department ,Jyothi Engineering College. Jyothi Engineering college , co-ordinator centre for water Research and Education (CWRE)
2) Godwin Jacob,HI in charge , FHC Panjal
3) Binoy Thomas JHI FHC Panjal

As directed by the principal I have inspected the water source of gups Painkulam along with the health inspector and junior health inspector and observed that apparently the water in the well is not in a proper condition. We have interacted with the school authorities and observed that there is a pit in which waste water from the school kitchen is disposed in an improper way.

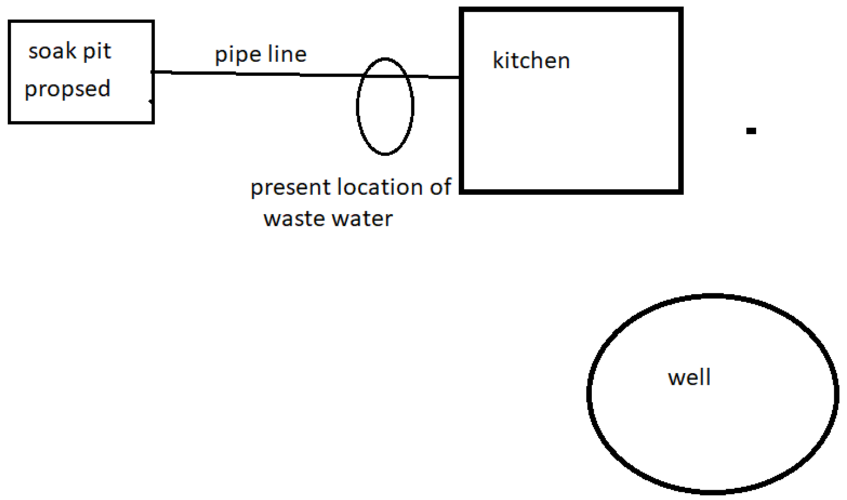


Fig 1Approximate layout map

Remedial Measure

primarily we have concluded that this may be the source for pollution and a proper system is essential for disposing the water. A properly built soak pit is highly essential for the school and an approximate design of the same is enclosed herewith

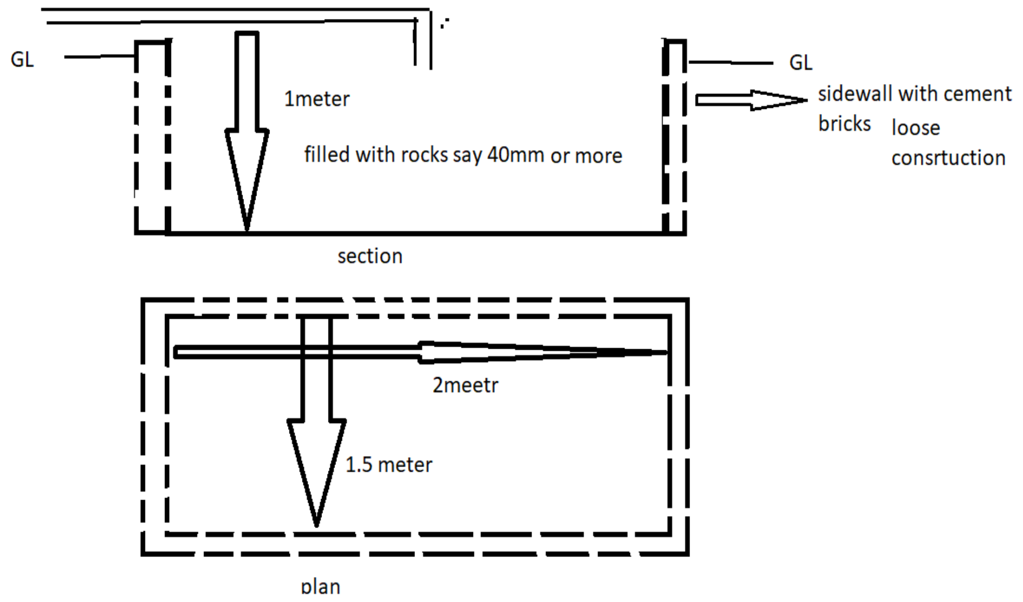


Fig2 soak pit

Sock pit

The spot for the has already been showed to the school authorities. That should be maximum away from the well. Sock pit is an effective method for disposal of waste water and it should be adopted wherever required . Size of pit may be approximately

2meter x1.5meterx1m . it may be constructed with cement bricks. After taking earth work all the for sides should be constructed with gap in between so that the waste water can be absorbed by the soil . it should be constructed slightly above the round level as shown in the figure

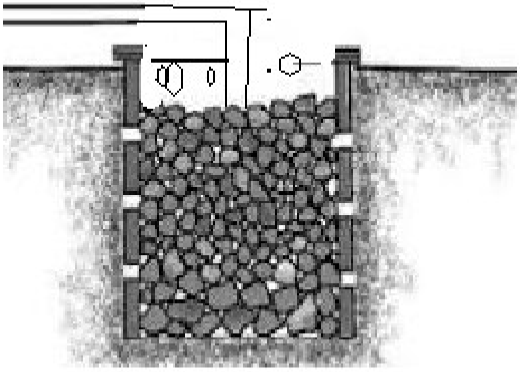


Fig3 Structure of the soak pit

Pipe-line for connecting waste water outlet to the soak pit should be of size 63mm and should be connected without leak

Suggestions on the Draft Notification dt 7.10.2024 of Government of India Regarding Management of Waste Water

Name of the Incumbent ; M.G.Cyriac

I am a retired Executive Engineer from Kerala Water Authority and worked as Director capacity Development unit (CCDU) Kerala state During the past 12 years I am working as Associate Professor of Civil Engineering in Jyothi Engineering College, Cheruthuruthy . I also started a system in this college for remediation of domestic water quality issues , which are common in Kerala It is .named as centre for water research and Education (CWRE). The main objective of the centre is to help the people for remediation of water quality issues. As we are aware domestic water quality issues are predominant in Kerala since there are 65 lakhs of open wells and most of them are located in small stretch of land and many such wells gets polluted due to the intrusion of waste water into the well from the nearby polluting sources
First of all, it is a welcome move to initiate steps for resolving the waste water issues Iin the country

For big system whatever that is proposed in the notification need be adopted

I have certain suggestion regarding the notification

1) ***Adopt Environmental Panning of building and the surrounding for disposal of waste water /other waste in an effective way***
2) ***Give guide line for waste water disposal in all systems including houses small establishments etc by constructing proper soak pits even if the quantity of waste water is less than 5000litres***
3) ***Increase the minimum quantity of waste water to be treated by treatment plant as 10000litres or 20 kg of BOD instead of the proposed 5000 litres or 10 kg BOD when the notification is finalized***

Notification is silent on the systems which produces less than 5000litres of water per day or 10 kg of BOD .In a state like Kerala where density of population , house density and well density are higher and hence waste water from a house itself is dangerous and that can pollute the nearby water sources First recommendation is to adopt the process namely Environmental Panning of building and the surrounding. Natural systems of waste water treatment that is caused due to the action of three types of bacteria in the soil or water like aerobic , anaerobic and facultative

Concentration of waste –waste water, excreta and urine, solid waste

Use of natural forces – air, water , Bacteria , Earthworms ,Trees and plants purification capacity of soil- water absorption Etc to be ensured

1. Environmental Panning of Building and the Surrounding

Environmental planning is planning the buildings and the surrounding in such a way that the natural forces like air , water, sunlight bacteria ,earthworms trees ,purification capacity of soils , water absorption etc to be designed to the advantage of the house / other buildings so as to make the life in the building comfortable to the users as well as to cause limited impacts on the environment

Surroundings has an influence on the performance of the house / other establishments

Land availability is a serious matter of consideration. Every building need minimum land to make it sustainable for the self-assimilation of the following

Human excreta and urine

Waste water

Solid waste Etc

Use of natural forces – air, water, Bacteria, Earthworms, Trees and plants, purification capacity of soil- water absorption etc to protect the building from pollution

ENVIRONMENTAL PLANNING OF HOUSES, SMALL ESTABLISHMNETS

Fig 1 approximate positioning of various polluting sources away from the water sources

Main components around the house and purpose are

Slno	Component	Purpose
1	Septic tank	Excreta treatment
2	Leach pit	Excreta treatment
3	Soak pit	Waste water treatment
4	Composting / biogas	Biodegradable solid waste
5	Well / borewell	Water supply
6	Trees/ plants	Absorbing oxygen produced

NB ;here well/ borewell should be protected from other polluting sources

All the waste sources to be placed in such a way that the water sources are protected and the surrounding is maintained in a hygienic way .Soak pits are best options for waste water treatment . See the figure 2below The purpose of soak pit is allow waste water from the building slowly percolate in to the soil . Bacterial action is also predominant in the system and that actually is the reason for the meritorious performance of properly built soak pit . It can be kept open due to the reason that it receives oxygen from the atmosphere also cleaning due to percolation rain water during rainy season

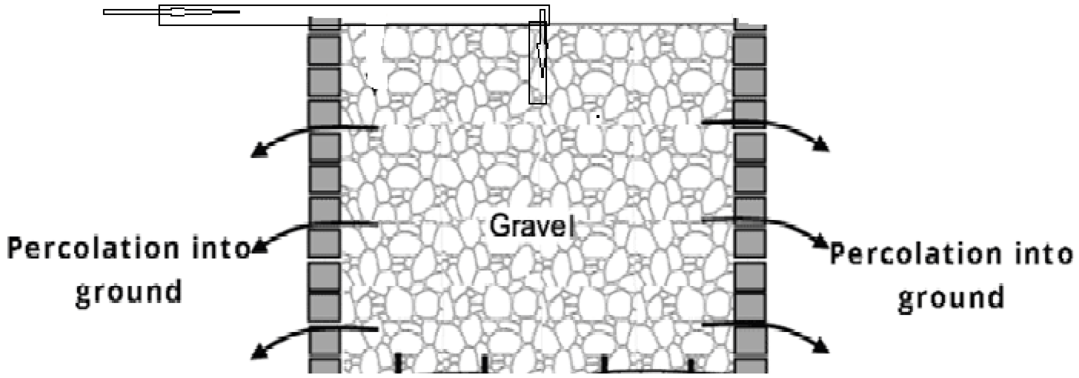


Fig 2 Soak pit

There can be more number of such soak pits in a house or other establishment

Soak pit is effective method for disposal of waste water

Properly constructed soak pit m should be made compulsory for all households instead of ring or any such systems. Soak trenches can also be adopted. By adopting such an approach and using the components mentioned and also by considering the surroundings environmental planning is possible for the building

2. Give guide line for waste water disposal in all systems including houses small establishments etc

Waste water disposal is a serious issue everywhere. For small systems properly constructed soak pits are the best option. Many other systems like rings etc created trouble to many people. So as a part of the notification it should made compulsory for all small or large establishments to construct soak pit properly in accordance with environmental planning

In a system we can have a more number of soak pits so that the waste water can be distributed in a larger area. In the soak pit action of bacteria is predominant and it is

observed that the system is workable in soil having even average percolation capacity.

LSGD of respective states especially states like Kerala where the density population is high, should be encouraged to use this type of methods

3.0) Increase the minimum quantity of waste water to be treated as 10000litres or 20 kg of BOD

If the proposed limit of 5000 is adopted, the number of applicants will be very high and the situation becomes highly complicated. People should be encouraged to use the natural system for waste water treatment rather than constructing treatment plants. In most of the cases where there is sufficient land the natural system will work Availability of land area is a matter of concern for natural treatment of waste water with reasonable BOD and that has to be considered while any rules are framed. Properly constructed soak pits or soak trenches may be considered as an option for water treatment in genuine cases if there is sufficient land and reasonable water absorption for soilSo the limit of 5000 proposed in the notification may be enhanced to 10000litres or 20kg of BOD. Industries or other establishment using more 10,000 litres of water per day only need be provided with waste water treatment facilities for waste water.

Soak trench is a better option for less than 10000 litres and approximate design of Size of soak trench for 10,000litres waste water are given

Sl no	Time for percolation in minutes	Average percolation litre / sqm/day	Area required In sqm	Size of soak Trench / soak pit proposed	Remarks
1	1minute or less	204	50 sqm	Soak trench 17m length 1.5 m deep 1m width	Two numbers can also be provided
2	2 minutes	143	70 sqm	Soak trench 24m length 1.5 m deep 1m width	Two numbers can be provided

3	3 minutes	118	84	Soak trench 24m length 1.5 m deep 1m width	Two numbers can be provided
4	4 minutes	102	98	Soak trench 28m length 1.5 m deep 1m width	Two numbers can be provided
5	5 minutes	90	111	37m length1.5 m deep 1m width	Two numbers can be provided
6	10 minutes	65	153	53m length1.5 m deep 1m width 1m	Two numbers can be provided
If the percolation capacity is too low size of the trench / pit may be increased or we can even go for treatment system					

Source of information; Sewage disposal and air pollution Engineering Vol 2 Santhosh Kumar Garg

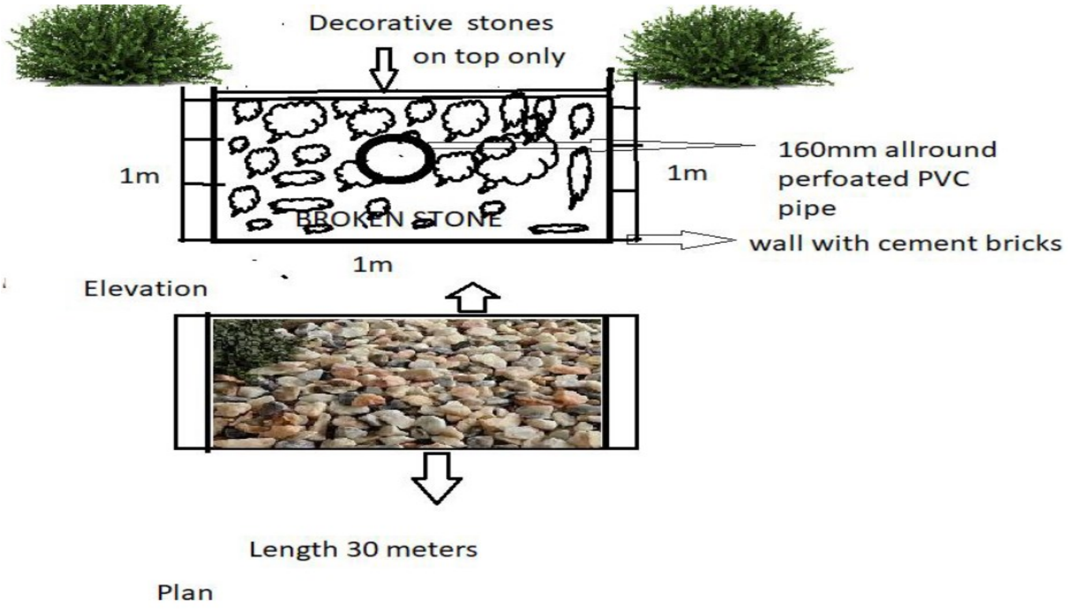


Fig 3 Soak Trench

Generally, the soil percolation is in the above range. If land is available for the following type of establishments the proposed which is using only domestic waste water

Households

Schools / colleges

Small sized railway stations

Public utilities

Churches / temples /similar type of establishments

Auditoriums

Hotels ete etc

Soak pits and soak trenches are highly relevant waste water treatment systems and due importance should be given to it when any rule is formulated and implemented. While any proposal is given for a house / factory / establishment / an environmental planning of the establishment and surrounding is to be given and to be implemented .Guideline for Environmental planning is to be formulated and issued in every state not only for waste water but also for other pollutants in a systematic way .Similarly for still small establishments like houses etc same type of technology may be utilized Provide more number of disposal systems septic tank, leach pit , soak pit suitably placed

Disposal of the waste water

Fig 4 eco-friendly house - Planting of trees around buildings advantageo

Appendix H

Centre for Water Reasearch and Education(CWRE) Jyothi Engineering college Cheruthuruthy

One day interactive workshop for pushparaj Associates ,Shornur
Dated 17.1.2025
Details
A workshop on water related subject was held for pushparaj assoicate shornur based on a specialized programme on payment basis . There were 17 participants and amount charged is Rs 1000/ each . The details about the programme are given here

Venue: Environmental Lab

Introduction:

The Centre for Water Research and Education (CWRE) Workshop on "Domestic Water Quality Issues in Kerala State and Remedies" was conducted on 17th January 2025 at the Environmental Lab. The event was designed to address critical concerns related to water quality, highlight the existing challenges in Kerala, and explore sustainable solutions. Water quality is a major issue in the state due to increasing pollution, contamination from industrial and agricultural sources, and inadequate water treatment measures. Experts from the field provided valuable insights, and participants had the opportunity to engage in hands-on demonstrations to better understand water testing and treatment techniques. The workshop brought together academicians, researchers, students, and professionals, fostering an environment for knowledge-sharing and collaboration. The workshop was mainly conducted for employees of Pushparaj Associates, Shoranur

Programme Summary:

The workshop commenced with an inauguration ceremony at 9:00 AM, where distinguished guests and faculty members addressed the participants. Dr. Vincy Verghese, Head of the Civil Engineering Department, welcomed the attendees,

emphasizing the significance of water quality management in Kerala. This was followed by a presidential address by Rev. Fr. Dr. Jose Kannambuzha, who highlighted the need for sustainable water resource management. The event was formally inaugurated by Rev. Fr. Thomas Kakkassery, Executive Manager, who stressed the importance of interdisciplinary collaboration in addressing water issues. Dr. V M Xaviour, the Registrar, delivered a felicitation speech acknowledging the efforts of the organizers in conducting the workshop. The inaugural session concluded with a vote of thanks by Ms. Jeffy Johny, Programme Coordinator, expressing gratitude to all participants and speakers for their support.

The technical sessions began with a lecture on "Water Quality Parameters - Standards and Bad Effects" by Ms. Anna Joseph, Assistant Professor, CE. She provided an overview of essential water quality parameters such as pH, turbidity, total dissolved solids (TDS), bio chemical oxygen demand (BOD), and chemical oxygen demand (COD). She also discussed the impact of poor water quality on human health and ecosystems, citing real-world examples of contamination incidents in Kerala. The session helped participants understand the importance of adhering to national and international water quality standards.

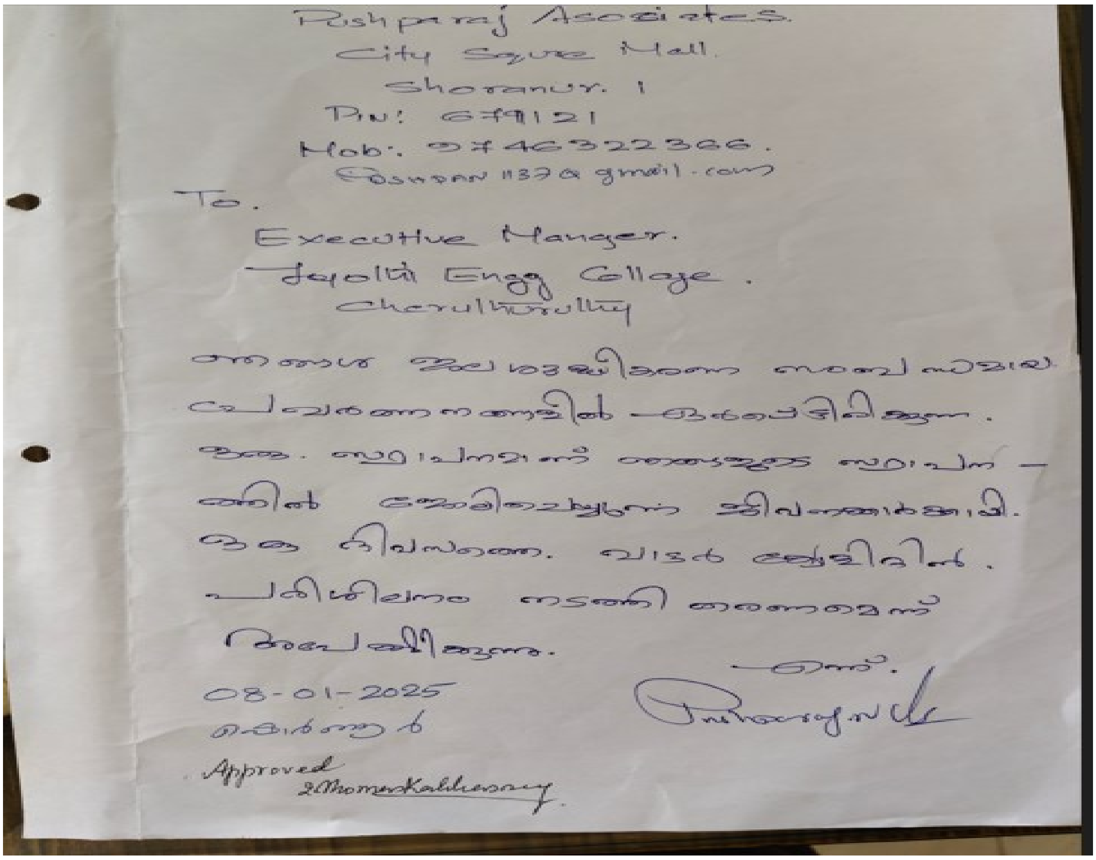
After a short tea break, the second session was conducted by Prof. M.G. Cyriac, Associate Professor, CE, on "Water Quality Issues in Kerala State: Causes & Remedies." This session provided an in-depth analysis of water contamination sources, including industrial effluents, agricultural runoff, and domestic sewage. Prof. Cyriac elaborated on case studies of major water pollution incidents in Kerala, explaining their long-term consequences on public health and the environment. He also discussed remediation techniques such as constructed wetlands, bioremediation, and decentralized wastewater treatment systems. The session encouraged participants to think critically about sustainable water management practices.

The post-lunch session was a hands-on demonstration on "Analysis of Water Quality Using Kits and Laboratory Instruments," led by Ms. Vini P, Ms. Shima Paul, Mr. Ignatious T F, Ms. Emilda John, Mr. Jackson V K, and Mr. Gokul Krishna M S. Participants learned to use portable water testing kits to measure pH, dissolved oxygen, and hardness. The session also introduced advanced laboratory equipment such as spectrophotometers and chromatographs for detecting heavy metal

contamination and microbial pathogens. This practical demonstration provided a deeper understanding of water quality assessment methodologies.

The next session, "Water Treatment – Commercial and Low-Cost Methods," was conducted by Prof. M.G. Cyriac. He elaborated on conventional water treatment processes such as coagulation, filtration, and disinfection. The session also introduced participants to low-cost, sustainable solutions suitable for rural households, such as bio-sand filters, and activated carbon treatment. He emphasized the role of community participation in implementing effective water treatment measures at the grassroots level.\

The workshop concluded with a valedictory function and certificate distribution. Dr. Jose P. Therattil, Principal, delivered the presidential address, appreciating the efforts of the organizing committee and the active participation of attendees. Fr. David Nettikkadan, Finance Officer, distributed prizes to outstanding participants. The participants from Pushpaj Associates also conveyed their feedback and requested for such events in future. The event officially ended with a vote of thanks by Dr. Vincy Verghese, expressing gratitude to the speakers, facilitators, and participants for their contributions to the success of the workshop.


Pushparaj Asosiates.
City Squre Mall.
Shoranur. 1
Pin: 679121
Mob: 9746322366.
[illegible]1137@gmail.com

To.
Executive Manger.
Jyothi Engg Collage.
Cherulhuruthy

ഞങ്ങളുടെ ഉപഭോക്താക്കളെ സംബന്ധമായ
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ത്തിൽ ജോലിചെയ്യുന്ന ജീവനക്കാർക്കായി.
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08-01-2025
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എന്ന്.
[signature]

Approved
[signature]

1 request letter from pushparaj associates

10.01.2025

സ്വീകർത്താവ്

പുഷ്പരാജ് അസോസിയേറ്റ്സ്
സിറ്റി സ്ക്വയർ
ഷൊർണ്ണൂർ.

വിഷയം	:	ജലഗുണനിലവാര വിഷയങ്ങളിൽ പരിശീലനം
സൂചന	:	താങ്കളുടെ 08.01.2025 ലെ കത്ത് പ്രകാരം

സർ,

താങ്കൾ ആവശ്യപ്പെട്ട പ്രകാരം ജലഗുണനിലവാര വിഷയങ്ങളിൽ പരിശീലനം നല്കുന്നതിന് ഉത്തരവാകുന്നു. 17.01.2025 ാം തിയ്യതി ഈ പരിശീലനം നടത്തുന്നതിനാണ് നിർദ്ദേശിച്ചിരിക്കുന്നത്. കുറഞ്ഞത് 10 പേരെങ്കിലും ഈ പരിശീലനത്തിനായി ആവശ്യമാണ്. ഒരാൾക്ക് 1000 രൂപ വീതം ഈടാക്കുന്നതായിരിക്കും. പങ്കെടുക്കാൻ താല്പര്യപ്പെടുന്ന ആളുകളുടെ പേരും വിലാസവും 1000 രൂപ വീതവും എത്രയും നേരത്തെ എത്തിച്ചുതരണമെന്ന് ഇതിനാൽ ആവശ്യപ്പെടുന്നു. മറ്റുവിവരങ്ങൾ പുറകെ അറിയിക്കുന്നതായിരിക്കും.

എന്ന്,

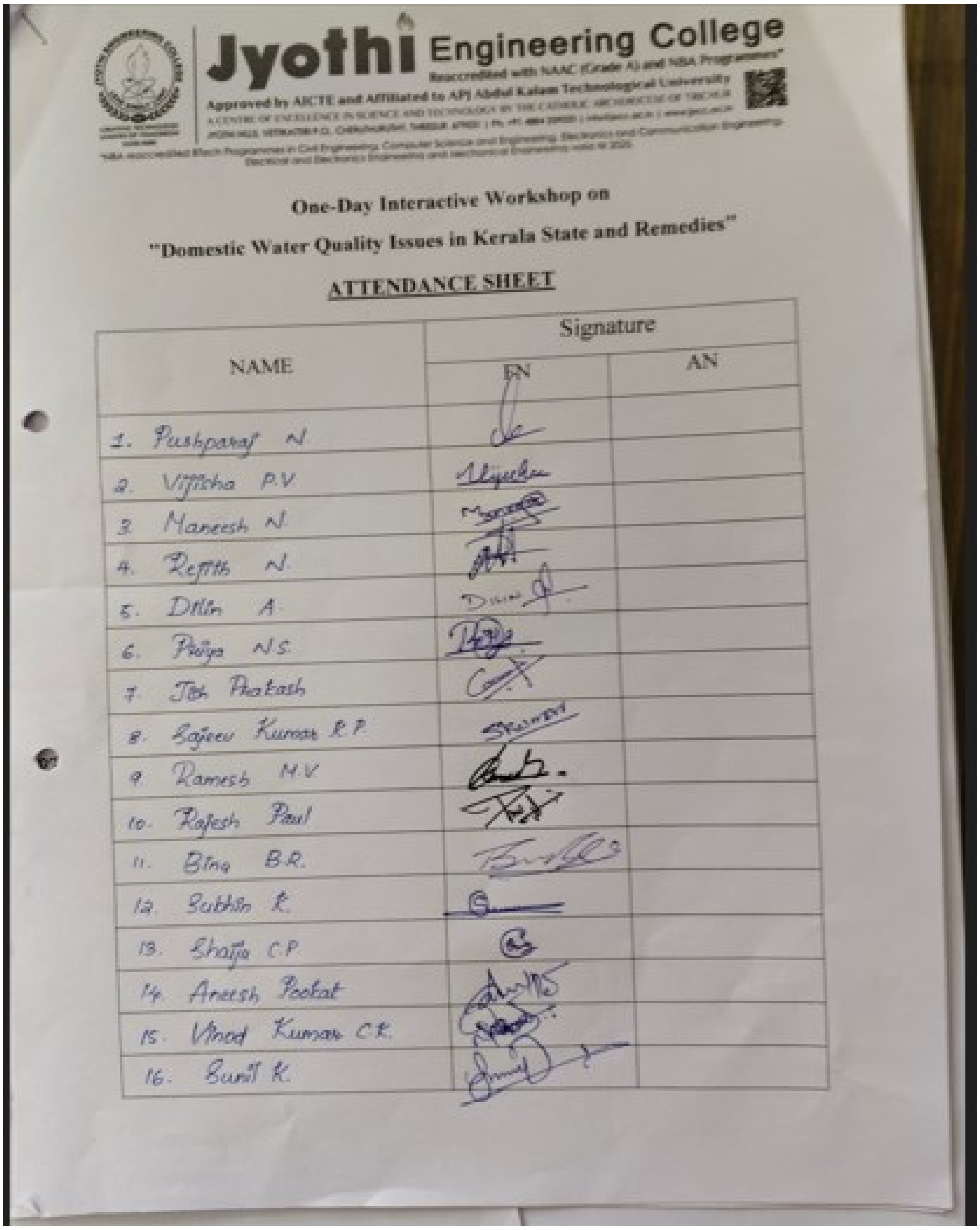
Thomas Kakkassery

ഫാ. തോമസ് കാക്കശ്ശേരി
എക്സിക്യൂട്ടീവ് മാനേജർ

A/c Name	:	Jyothi Engineering College
A/c No.	:	15250100001019
Bank	:	Federal Bank Ltd., Cheruthuruthy Branch
IFS Code	:	FDRL0001699

Sanction of the programme by Executive Manager Fr Thomas Kakkssery

Name of participants



Jyothi Engineering College

Reaccredited with NAAC (Grade A) and NBA Programmes*

Approved by AICTE and Affiliated to APJ Abdul Kalam Technological University

One-Day Interactive Workshop on

"Domestic Water Quality Issues in Kerala State and Remedies"

ATTENDANCE SHEET

NAME	Signature	
	FN	AN
1. Pushparaj N		
2. Vijisha P.V		
3. Maneesh N.		
4. Rejith N.		
5. Dilin A.		
6. Priya N.S.		
7. Jith Prakash		
8. Sajeev Kumar R.P.		
9. Ramesh M.V		
10. Rajesh Paul		
11. Bina B.R.		
12. Subhin K.		
13. Shaiju C.P.		
14. Aneesh Pookat		
15. Vinod Kumar C.K.		
16. Sunil K.		

Jyothi Engineering College

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*NBA reaccredited BTech Programmes in Civil Engineering, Computer Science and Engineering, Electronics and Communication Engineering, Electrical and Electronics Engineering and Mechanical Engineering valid till 2025

One-Day Interactive Workshop on

"Domestic Water Quality Issues in Kerala State and Remedies"

ATTENDANCE SHEET

NAME	Signature	
	FN	AN
17. Harikrishnan M		
18. Emilda John		
19. Jackson V.T.		
20. Gokul Krishna		
21. Jeffy Johny		
22. Shima Paul		
23. Vibi P		
24. Ignatious T.F.		
25. George C.J.		
26. Binu B.R.		

Programme schedule

Jyothi Engineering College

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One-Day Interactive Workshop on

"Domestic Water Quality Issues in Kerala State and Remedies"

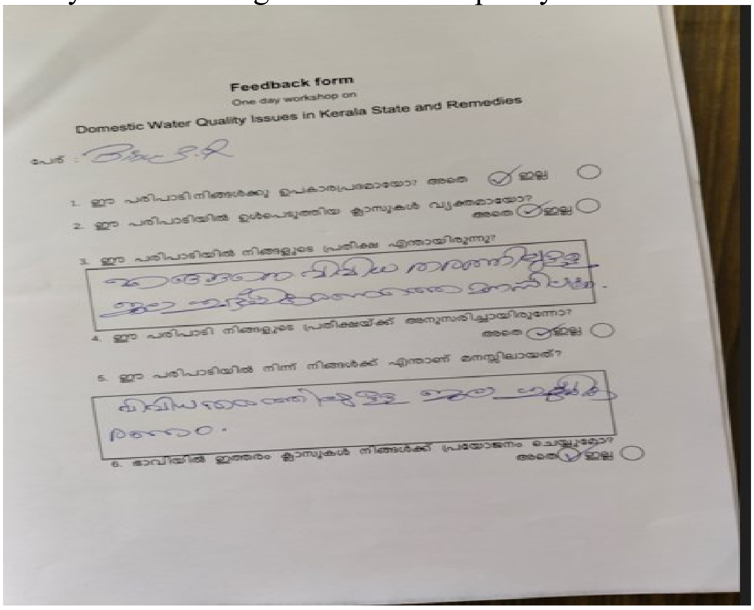
Programme Schedule

9.00 am	:	Registration
9.00 am to 9.30 am	:	Inauguration Ceremony
Welcome Address	:	Dr. Viney Verghese (HOD, CE)
Presidential Address	:	Rev. Fr. Dr. Jose Kannambuzha (Academic Director)
Inauguration	:	Rev. Fr Thomas Kakkassery (Executive Manager)
Felicitation	:	Dr. V M Xaviour (Registrar)
Vote of thanks	:	Ms. Jeffy Johny (Programme Co-ordinator)
Sessions:		
9.30 am- 10.15 am	:	Water Quality Parameters - Standards and Bad Effects (Ms. Anna Joseph, Assistant Professor, CE)
10.15 am – 10.30 am	:	Tea break
10.30 am to 12.30 pm	:	Water quality issues in Kerala state: Causes & Remedies (Prof. M.G. Cyriac, Associate Professor, CE)
12.30 pm - 1.15 pm	:	Lunch break
1.15 pm to 2.30 pm	:	Analysis of water quality using kits and demonstration of instruments in the lab
2.30 pm to 3.15 pm	:	Water Treatment – Commercial and Low Cost Methods (Prof. M.G. Cyriac, Associate Professor, CE)
3.15 pm -3.30 pm	:	Tea break
3.30 pm – 4.00 pm	:	Valedictory function and distribution of certificates
Presidential Address	:	Dr. Jose Therattil (Principal)
Prize distribution	:	Fr. David Nettikkaden (Finance Manager)
Vote of thanks	:	Dr. Viney Verghese (HOD, CE)

Fr Thomas Kakkassery, Execuitve Manager Inaugurating the programme . Fr Jose kannambuzha, academic director , Dr VM Xaviour Registrar , Dr Vincy verghese HOD civil Sr Puzhaparaj are also seen

Students Jackson V.K , Emilda john and Gokul Krishna M.S demonstrting filter

Prof M.G Cyriac delivering class on water quality issues in Kerala State



The workshop successfully provided participants with an in-depth understanding of water quality issues, assessment techniques, and treatment solutions. The interactive sessions and hands-on demonstrations were well-received, fostering awareness and knowledge-sharing among attendees. The discussions emphasized the need for stringent policies, community-driven initiatives, and technological interventions to ensure safe and sustainable water resources in Kerala. Future workshops could focus on emerging contaminants, climate change impacts on water resources, and advanced water treatment technologies to further enhance the knowledge and skills of stakeholders in this field.

Conclusion

Waste water treatment is an important field where we need innovation and proper involvement. properly constructed soak pits are advantages. Environmental planning is more or l ess a new approach which needs attention in future. Soak trenches are also feasible in many areas and can be used with advantage. constructing treatment plant and its maintenance are always not feasible. the naturally available treatment systems to be utilized to the extent possible

HIGHLIGHTS OF CWRE ACTIVITIES

RESARCH AND AWARENESS CREATION

a) Research Activities related to drinking water such as study on the quality deterioration of domestic water sources like wells, study on river pollution, study on low-cost water treatment equipment etc

b) Analysis of water samples and inspection of water sources for remediation of water pollution issues

c) Activities in conjunction with objectives of Unnat Baharat Abhiyan

d) One Day Awareness Training on Water Conservation for government employees like health inspector etc

e) Well chlorination for flood affected area in 2018

f) Study on river pollution issues

g) Water related student projects – Research on development of domestic low cost water treatment systems

h) Publishing books on water related subjects

i) Articles in the editorial page of newspapers on water related subjects

j) Water quality awareness competition for students

k) WhatsApp group for water quality remediation

l) Training to water professionals on related subjects

m) Programme published for one day awareness for all categories of people