IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Level Of Awareness Of Stakeholders About Water Quality Checking For Construction With Special Reference To Coimbatore City

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Abstract: This study focuses on the significance of water quality checking in construction activities, with a particular emphasis on Coimbatore City. The integrity of construction materials, worker health, and environmental sustainability are directly influenced by water quality. Given Coimbatore's reliance on both groundwater and surface water, regular testing is essential to identify potential contaminants, especially in light of industrial activities and urban runoff. This study advocates for pre-construction assessments, continuous monitoring throughout the construction process, and compliance with local and national regulatory standards. The findings underscore the necessity of establishing robust water quality management practices to ensure safe, efficient, and environmentally responsible construction in Coimbatore**.**

Key words **- Water Quality, Testing, Corrosion, Durability, Innovation, Sustainability**

I. Introduction

Water is the lifeblood of construction projects, permeating every aspect from the initial ground-breaking to the final finishing touches. Its importance cannot be overstated, serving as a critical component in concrete mixing, dust suppression, compaction, and a myriad of other construction activities. However, the quality of water utilized in these processes is often overlooked, despite its profound impact on the structural integrity of buildings and the health and safety of construction personnel. In recent years, there has been growing recognition of the importance of water quality testing in construction projects. Contaminants such as heavy metals, organic matter, and microbial pathogens can compromise the strength and durability of construction materials, leading to structural failures and health hazards. As a result, there is an increasing emphasis on the need for thorough testing and monitoring of water quality throughout the construction process. Despite this growing awareness, there remains a significant gap in understanding among stakeholders in the construction industry regarding the necessity and methodologies of water quality testing. From project managers to site engineers, contractors to regulatory bodies, many individuals involved in construction projects lack the knowledge and resources to effectively manage water quality. The quality of water used in construction projects is a multifaceted concern. It's not just about ensuring the absence of visible impurities; rather, it involves the detection and mitigation of various contaminants that could compromise the strength, durability, and safety of the constructed infrastructure. These contaminants range from heavy metals and organic matter to microbial pathogens, each posing unique challenges to construction materials and worker well-being. Amidst the hustle and bustle of construction sites, the awareness of the importance of water quality testing remains alarmingly low among many stakeholders in the construction industry. From project managers to site engineers, contractors to regulatory bodies, there exists a significant gap in understanding the necessity and methodologies of water quality testing. This knowledge gap not only hampers the efficient management of construction projects but also jeopardizes the long-term performance and safety of the built environment. Construction projects rely heavily on water for various purposes, making it one of the most utilized resources on job sites.

However, the quality of water used in construction is often overlooked, with little attention paid to potential contaminants that could compromise the integrity of structures and the health of workers. Contaminants such as heavy metals, organic matter, and microbial pathogens pose significant risks to construction materials and personnel if not adequately address

II. Literature Review

This study observes the following researches for references, **Mohd Hairul Khamidun (2021)** - Water quality explains the condition of the water, includethe characteristics of chemical, physical, and biological. The study of this project is basically on the surface water quality assessment by using Malaysian WQI and NSFWQI based on secondary data of monitoring the water quality in road construction activities. Malaysia WQI use six parameters which are biochemical oxygen demand (BOD), chemical oxygen demand (COD), dissolved oxygen (DO), NH3N, pH, and total suspended solids (TSS) to evaluate the water quality**. Irina Yaroshenko , Dmitry Kirsanov , Monika Marjanovic (2020)** -Water quality is one of the most critical indicators of environmental pollution and it affects all of us. Water contamination can be accidental or intentional and the consequences are drastic unless the appropriate measures are adopted on the spot. This review provides a critical assessment of the applicability of various technologies for realtime water quality monitoring, focusing on those that have been reportedly tested in real-life scenarios. **Maria P. Vilas a,g , Peter J. Thorburn a, Simon Fielke b , (2020)** - Intensive agricultural practices represent a major threat to aquatic ecosystems because they impair water quality. However, this can be ameliorated by farmers improving crop management provided they are aware of their contribution to declining water quality. Water quality information systems can increase farmer awareness, but most were developed to assess water quality targets set in regulations rather than inform farmers. We developed the 1622WQ application using user-centred design principles to provide farmers with real-time information. **ArnizaFitri, Khairul Nizam Abdul Maulud (2020)** - The issues of freshwater pollutions and the high demand of clean freshwater for daily human activities have forced developing countries such as Malaysia to continuously monitor the quality of the freshwater. In addition,increasing the number of construction, human activities in the land use areas, land usechanges and the sewage water from domestic, industrial, wet market. **Mandar M.Joshi,Dr.S.K.Deshmukh (2019)** - Water is an integral part of construction. If the water quality is not maintained, the building gets damaged easily and it can be easily visible. Water is important in every step of construction. Cement concrete is the backbone of construction. Water used in construction and curing should be free from salts and solid particles. **Murat Okumah , Pippa J. Chapman (2018)** - Diffuse water pollution is a major environmental issue worldwide causing eutrophication, human health problems, increased water treatment costs and reducing the recreational potential of water bodies. In addition to penalties and provision of incentives, policy efforts are increasingly focusing on raising land managers' awareness regarding diffuse pollution under the expectation that this would influence behaviours and thus increase uptake of best management practices that would, in turn, improve water quality. **VirgondaAnnaso Patil (2017)** - Water management for construction site is very important issue from the point of view of environmental impact as well as structural stability of the building. A well-managed site reduces environmental impacts on the structure.At prior stage water management is not considered to be vital point of planning and supervision as well, as the time passes all the possible chances of water entry in the structured is observed. As a result it seems very worst stage of existing building**. Ashlee Jollymore, Morgan J. Haines, Terre Satterfield (2017)**- Our water quality monitoring citizen science campaign, 'Waterlogged', was designed as a 'contributing' citizen science project (i.e., scientist-directed program encompassing participation) (Bonney et al., 2009a). The aim was to investigate how human activities affect water quality, specifically around the concentration and types of organic matter within surface waters like streams and rivers. Given that organic matter is a lesser known water quality parameter among the public**. Jeong (2015)** -In order to investigation long-term variations of water qualities in the Saemangeum Salt-Water Lake formed after the sea-dike construction, the survey has carried out over 40 time from 2002 to 2010. The decreased salinity in surface water immediately after the dike construction has maintained on equal terms for years. After the dike construction, the early concentration of SPM in surface water has decreased but then it showed the tendency to move up and down due to the changes of water level in the lake**. Xu Xiuquan (2014)** - A plastic mixture construction technology using MBER (material becoming earth into rock) soil stabilizer is introduced and the water quality of a solidified soil cistern using the technology is analyzed. Rainwater was harvested in July， 2012． Water quality of runoff and cistern water afterstorage was measured,including turbidity， chemical oxygen demand (COD) ,total nitrogen,nitrateand ammonia. **James S. Main (2014)** - Groundwater quality in the study area has been analysed in the present work. For this study, a part of Mumbai Metropolitan Region were selected which covers almost the entire area. Fifteen water samples, from various bore wells covering the study area during post monsoon season 2013 were collected to find out the values of

differentparameters in the groundwater so as to check the suitability for construction. **S. P. Gorde , M. V. Jadhav2 (2013)** - Water is the most important in shaping the land and regulating the climate. It is one of the most important compounds that profoundly influence life. The quality of water usually described according to its physical, chemical and biological characteristics. Rapid industrialization and indiscriminate use of chemical fertilizers andpesticides in agriculture are causing heavy and varied pollution in aquatic environmentleading to deterioration of water quality and depletion of aquatic biota. **William F. Hunt, M.ASCE1 ; Allen P. Davis, F.ASCE (2012)** - Bioretention is one of the most commonly used stormwater control measures (SCMs) in North America and Australasia. However, current design is not targeted to regulatory need, often reflecting an outdated understanding of how and why bioretention works. The purpose of this manuscriptis to synthesize research to recommend a suite of design standards focused on the purpose of bioretention SCM. **Leila Ooshaksaraie and Noor Ezlin Ahmad Basri (2011)** - Urban development is particularly rapid in Malaysia. An untoward environmental impact of urban growth in Malaysia has been the frequent occurrence of excessive soil losses from construction sites. Therefore, in Malaysia, Department Of Environment (DOE) has proposed preparing water quality monitoring plan during construction activities. Monitoring has four steps: (1) identifying sampling stations, (2) identifying sampling frequency, (3) describing water quality monitoring parameters, (4)assessing water quality condition compliance with regulatory requirements. **S. Bardhan (2011)** - Building construction is a highly resource intensive process, concerning use of materials, land, energy and water. Since buildings are required to fulfil our primary need for shelter, consumption of these resources is simply unavoidable. However, with shrinking stock of natural resources and degrading eco-system services, the consumptionprocess has to be wise, judicious. Water resource management in building construction and operation, however, has still a long way to go, especially because the amount of water used per unit area of construction largely remains undocumented.

III. Objective of the study

The study determine the existing knowledge levels among construction professionals, regulatory bodies, and other stakeholders regarding the importance of water quality testing. Identify specific gaps in awareness that may hinder effective water quality management in construction projects. Understand stakeholders' perceptions of the risks associated with poor water quality and its impact on construction integrity and public health. Encourage compliance with local regulations and standards related to water quality testing in construction.

IV. Methodology

The methodology for assessing the level of awareness of stakeholders about water quality checking for construction in Coimbatore City involves several key steps. First, key stakeholder groups-such as construction professionals, regulatory authorities, contractors, and community representatives-will be identified. A structured questionnaire will be developed, incorporating multiple-choice, Likert scale, and open-ended questions to gauge knowledge and perceptions regarding water quality. A stratified random sampling method will be employed to ensure diverse representation, and data will be collected through online surveys and face-to-face interviews. Quantitative data will be analyzed using statistical software to determine awareness levels, while qualitative responses will undergo thematic analysis to identify common themes. Finally, findings will be compiled into a comprehensive report, presented to stakeholders, and followed up with recommendations for enhancing awareness and practices in water quality management.

V.Analysis

Simple Percentage Analysis:

Based on the Simple Percentage Analysis we have the following findings:

Table No. 1.1

TABLE SHOWING THE AGE OF THE RESPONDENTS

Age	No .of Respondents	Percentage
25 – 30 years	99	82.5
31 – 40 years	14	11.7
41 – 50 years	5	4
51 above	2	1.7
Total	120	100

Source : Primary data

From the above table it is inferred that, 82.5% of the respondents belong to age group between 25-30 years , 11.7 % of the respondents are between 31-40 years ,4.2% of the respondents are between 41-50 years and the remaining 1.7 % of the respondents belong to the 51 and above age group. Majority of the respondents (82.5%) belong to age group between 25-30 years.

Table No. 1.2

TABLE SHOWING THE GENDER OF THE RESPONDENTS

Gender	No of Respondents	Percentage
Male	86	71.7
Female	34	28.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 71.7% of the respondents are male and 28.3% of the respondents are female. Majority (72%) of the respondents are male.

Table No. 1.3

TABLE SHOWING THE OCCUPATION OF THE RESPONDENTS

Occupation	No. of Respondents	Percentage
Engineer	47	39.2
Building contractor	29	24.1
Individual	32	26.7
Supervisor	12	10
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that, 39.2% of the respondents are Engineer,24.1 % of the respondents are Building contractors, 26.7 % of the respondents are Individual and the remaining 10% of the respondents are Supervisor. Majority of the respondents (39.2%) are engineers.

Table No. 1.4

TABLE SHOWING THE AREA OF CONSTRUCTION OF THE RESPONDENTS

Area of construction	**No. of Respondents**	**Percentage**
Rural	80	66.7
Urban	40	33.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 66.7% of the respondents are living in rural area and 33.3% of the respondents belong to urban area. Majority of the respondents (66.7%) are living in rural area.

Table No. 1.5

TABLE SHOWING THE TYPE OF CONSTRUCTION OF THE RESPONDENTS

Type of construction	**No of Respondents**	**Percentage**
House	86	71.7
Business sector	21	17.5
Institution	6	5
Apartment	7	5.8
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 71.7% of the respondents are using the test for constructing the house,17.5% of the respondents are using the test for the business sector, 5% of the respondents are using the test for institutions and the remaining 5.8% of the respondents are using the test for apartment. Majority of the respondents (71.7%) are using the test for constructing the house.

Table No. 1.6

TABLE SHOWING AWARENESS ABOUT THE WATER CHECKING QUALITY FOR THE CONSTRUCTION

Water checking quality	**No. of Respondents**	**Percentage**
Yes	86	71.7
No	34	28.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that,71.7% of the respondents aware about the water checking quality and remaining 28.3% of the respondents are not aware about water checking quality. Majority of the respondents (71.7%) aware about the water checking quality for their construction.

Table No. 1.7

TABLE SHOWING NECESSITY OF WATER CHECKING QUALITY ACCORDING TO RESPONDENTS

Necessity	No. of Respondents	Percentage
Yes	91	75.8
No	29	24.2
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 75.8% of the respondents' states that water checking quality is necessary and the remaining 24.2% of the respondents' states that it is not necessary. Majority of the respondents(51.7%) use groundwater as their water source type for the construction.

Table No. 1.8

TABLE SHOWING THE WATER SOURCE TYPE USED BY THE RESPONDENTS FOR CONSTRUCTION

Water source type	No. of Respondents	Percentage
Ground water	62	51.7
Municipal city water	28	23.3
Private water service	20	16.7
Other	10	8.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that,51.7%of the respondents use groundwater for their water quality checking ,23.3%of the respondents use municipal city water for their source ,16.7% of the respondents use private water service for their source and remaining 8.3% of the respondents use other water source type for their construction. Majority of the respondents(51.7%) use groundwater for their water source type for the construction.

Table No. 1.9

TABLE SHOWING THE DAYS TAKEN TO GET THE WATER QUALITY TESTING RESULT

Days taken	No. of Respondents	Percentage
On spot	56	46.7
1 day	40	33.3
3 days	20	16.7
More than a week	4	3.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that,46.7% of the respondents are getting test results on spot,33.3% of the respondents are getting test results in 1 day, 16.7% of the respondents are getting test results in 3 days and remaining 3.3 % of the respondents are getting test results more than a week. Majority of the respondents (46.7%) are getting test results on spot.

Table No. 1.10

TABLE SHOWING THE WATER QUALITY CHECKING IS PAID OR FREE

Perception	No. of Respondents	Percentage
Paid	93	77.5
Free	27	22.5
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 77.5 % of the respondents are paid to test the water quality and 22.5% of the respondents are testing the water quality for Free. Majority of the respondents (77.5%) are paid to test the water quality.

Table No. 1.11

TABLE SHOWING THE TYPE OF COMPANY PROVIDING WATER QUALITY CHECKING SERVICE

Company	No. of Respondents	Percentage
Bharathi cement	53	44.2
Ultratech cement	41	34.2
Ramco cement	26	21.7
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 44.2% of the respondents are doing water tests in Bharathi cement, 34.2% of the respondents are doing water tests in Ultratech and remaining 21.7% of the respondents are doing water tests in Ramco. Majority of the respondents (44.2%) are doing water tests in Bharathi cement.

Table No. 1.12

TABLE SHOWING THE USEFULNESS OF WATER QUALITY CHECKING ACCORDING TO THE RESPONDENTS

Perception	No. of Respondents	Percentage
Useful	110	91.7
Not useful	10	8.3
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 91.7% of the respondents states that it is useful and 8.3% of the respondents states that it is not useful. Majority of the respondents(91.7) states that water quality checking is useful.

Table No. 1.13

TABLE SHOWING THE PROBLEMS FACED WHILE CHECKING THE WATER QUALITY

Problem	No. of Respondents	Percentage
Delaying Laboratory analysis results	61	50.8
Field Testing limitations	36	30
Seasonal variations	23	19.2
Total	**120**	**100**

Source: Primary data

From the above table it is inferred that 50.9% of the respondents are facing the problem of delaying laboratory analysis results, 30% of the respondents are facing the problem of field testing limitations, and the remaining 19.2% of the respondents are facing the problem of seasonal variations. Majority of the respondents (50.8%) are facing the problem due to delaying laboratory analysis results.

Table No. 1.14

TABLE SHOWING THE LEVEL OF SATISFACTION OF THE RESPONDENTS ABOUT WATER QUALITY TESTING SERVICES

PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
Highly satisfied	51	43
Satisfied	40	33
neutral	24	20
Dissatisfied	5	4
TOTAL	**120**	**100**

Source: Primary data

From the above table it is inferred that 43% of the respondents are highly satisfied with the water quality testing service, 33% of the respondents are satisfied , 20% of the respondents are neutral and 4% of the respondents are dissatisfied. Majority of the respondents (43%) are highly satisfied with the water quality testing service.

Findings

Percentage Analysis

- Majority of the respondents 82% belong to the age group between 25-30.
- Majority 72% of the respondents are male.
- Majority 39% of the respondents are Engineers.
- Majority 68% of the respondents are living in the rural areas.
- Majority 72% of the respondents are using the test for constructing the House.
- Majority 72% of the respondents are aware about the water checking quality for their construction.
- Majority76% of the respondents state that water checking quality is necessary.
- Majority 52%of the respondents use groundwater as their water source type for the construction.
- Majority 47% of the respondents are getting test results on the spot.
- Majority 78% of the respondents are paid for checking the water quality.
- Majority 44% of the respondents are doing the water test in Bharathi cement.
- Majority 92% of the respondents state that water quality checking is useful.
- Majority 50.8% of the respondents are facing the problem due to delaying laboratory analysis results.
- Majority 43% of the respondents are highly satisfied.

Suggestions

- This study suggests conducting educational workshops and seminars to develop documentation and guidelines for stakeholders.
- This study suggest to Collaborate with regulatory agencies for creating awareness campaigns and Provide regular updates on regulations and standards.

Conclusion

Raising awareness about water quality checking in construction is crucial. It helps stakeholders understand why it's important to test water, ensuring projects are environmentally friendly and sustainable. By organizing workshops, sharing guidelines, and providing online training, stakeholders can learn about the significance of water quality. Collaborating with regulators and demonstrating testing techniques on-site further reinforces this knowledge. Integrating water quality checks into project planning and sharing success stories also motivate stakeholders to prioritize these practices. Engaging with local communities and seeking continuous improvement through feedback ensures everyone remains committed to protecting water resources in construction projects. This project is concluded that the water quality test services will be helpful to the stakeholders for the damage of their construction.

References

1. **Mohd Hairul Khamidun (2021)** "Assessment of surface water quality using Malaysia water quality index and National sanitation foundation water quality index during construction activities "ISSN: 2773-5184, Vol 3, December, pp380-388
2. I**rina Yaroshenko, Dmitry Kirsanov, Monika Marjanovic (2020) "**Real time water quality monitoring with chemical sensors"ISSN: 2012-3432, June.
3. **Maria P. Vilas a,g , Peter J. Thorburn a, Simon Fielke b , (2020)** "A web based application to increase farmer awareness of the impact of agriculture on water quality"ISSN: 0301- 4797, June.
4. **ArnizaFitri, Khairul Nizam Abdul Maulud (2020)** "Trend of water quality status in Kelantan river downstream, Peninsular Malaysia" ISSN: 2477-3484, Vol 16, December, pp179-184.
5. **Mandar M.Joshi,2Dr.S.K.Deshmukh (2019)** "Quality of water for Construction efforts and limits" ISSN:2349-5162, Vol 6, Issue 4, April, pp215-217
6. **Murat Okumah , Pippa J. Chapman (2018)** "Mitigating agriculture diffuse pollution uncovering the evidence base of the awareness – behavior – water quality pathway" ISSN: 2073-4441, December

7. **VirgondaAnnaso Patil (2017)** "Water management of construction site" ISSN: 2277-9655, January, pp74-80.
8. **Ashlee Jollymore, Morgan J. Haines, Terre Satterfield (2017)** "Citizen science for water quality monitoring : Data implications of citizen perspective" ISSN: 0301-4797, January, pp458-467
9. **Jeong(2015)** "The Long-term Variations of Water Qualities in the Saemangeum Salt-Water Lake after the Sea-dike Construction" ISSN: 2288-0089, Vol 18, Issue 2, May, pp51-63
10. **Xu Xiuquan (2014)**" Water quality Assessment using multivariate statistical techiniques : A case study of Yangling section" , china ISSN: 0972-6268, Vol 13, February, pp225-234
11. **James S. Main (2014)** "Ground water quality analysis for construction of part of Mumbai metropolitan region" ISSN: 2349-2163, Vol 1, Issue 6, July, pp83-86
12. **S. P. Gorde1 , M. V. Jadhav2 (2013)** "Assessment of water quality Parameters" ISSN: 2248- 9622, Vol 3, Issue 6. November, pp2029-2035
13. **William F. Hunt, M. ASCE1 ; Allen P. Davis, F.ASCE (2012) "**Water quality goals though targeted bioretention design" ISSN: 1943-7870
14. **Leila Ooshaksaraie and Noor Ezlin Ahmad Basri (2011)** "An expert system applied in construction water quality monitoring" ISSN: 1553-345.
15. **S. Bardhan (2011)** "Assessment of water resource consumption in building costruction in India" ISSN: 1743-3541 pp93-10