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ANALYSIS OF EMERGING CONTAMINANTS THROUGH THE LENS OF THE PACKAGED DRINKING WATER CASE

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Abstract

Emerging contaminants pose a significant threat to the current water quality discussions. These substances include pharmaceutical residues, endocrine-disrupting chemicals, and plasticisers such as "Diethylhexyl phthalate"[3] and antimony. These compounds have continued ill-effectsowing to their environmental persistence, bioaccumulation in living organisms, and resistance to conventional treatment methods. In India, existing regulations for packaged drinking water have not adequately addressed these emerging threats. In 2025, the Supreme Court of India addressed this issue by dismissing a public interest litigation[4]that sought stricter regulations and alignment with international standards. The Court categorised the case as "luxury litigation", citing competing priorities concerning equitable access to water. Therefore, a comprehensive evaluation of the current legal and regulatory framework is necessary. This study utilizes a mixed-methods approach, combining legal analysis with empirical data. The analysis covers the "Bureau of Indian Standards"[5]specifications (IS 10500:2012 and IS 14543:2016), guidelines from the Food Standards and Safety Authority of India,[6]and constitutional law jurisprudence which expands the scope of the "right to life". Furthermore, the study reviews survey data which demonstrates significant public support for enhanced water quality testing, even if such measures result in increased costs. This literature, through a comparative analysis aims to highlight the disparities between Indian standards and international guidelines. The findings

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indicate a structural imbalance in India's water safety regulations, characterized by a predominant focus on access rather than quality. This paper concludes by demonstrating the pressing need for legislative reforms, enhanced regulatory oversight, and better alignment with global goals to ensure the provision of safe and sustainable drinking water.

Introduction

The accessibility and quality of water are general concerns that are fundamental to the well-being of humans across the globe. Availability of safe and clean water for the purposes of consumption is not simply a subject of convenience, but also an important component of public health. This obligation travels beyond geographical limits, and aligns with the ambitions of Sustainable Development Goal 6, which stresses upon the universal goal of achieving sustainability of water. The continuing absence of accessibility or quality of consumable water prevails as a concern, furthering the neglect of public health, as well as individual impacts to well-being. Owing to fast-paced urbanisation and industrialisation, the risks posed by emerging pollutants to the ecosystem, including the water resources, has become increasingly prominent. Resultantly, the existence of "contaminants of emerging concern"[7] in potable water systems is unavoidable because of their omnipresent nature in marine ecosystems.[8]

While "Har Ghar Jal", an initiative of the State which seeks to ensure adequate and safe potable water to rural homes is being lauded as a significant achievement in the quest to further the well-being of citizens, the refusal of the Apex Court of the country to adjudicate on a PIL filed for an assessment of the standards imposed on packaged drinking water, demands reflection and consideration. Deeming this case as "luxury litigation", while holding it undeserving of the Court's time when most of the citizens are still not able to avail access to basic potable water inadvertently reveals the difference between political discourse and lived human experiences.[9] The PIL sought for instructions to be made to the FSSAI to redraft

[7]*Hereinafter referred to as "CEC".*
[8]Rinaldy Jose Nathanael, Latonia Nur Adyanis & Katharina Oginawati, *The last decade epidemiologic concern of drinking water contaminants of emerging concern (CECs) in Asian Countries: A scoping review*, HELIYON (2024), https://www.cell.com/action/showPdf?pii=S2405-8440%2824%2915267-X.
[9]Dharmesh Shah, *Between Har Ghar Jal and "Luxury Litigation": A Question of Water Quality*, THE WIRE (2026), https://thewire.in/health/between-har-ghar-jal-and-luxury-litigation-a-question-of-water-quality.

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its regulations on the allowable limits of DEHP and antimony in bottled drinking water, to align it with global frameworks governing the same.

Highlighting that the people residing in rural areas primarily rely on groundwater, the Chief Justice of India deemed the questions pertaining to standards applicable to bottled water an "urban centric approach", and further added that the people residing in rural areas consume groundwater, and remain unaffected by the same.[10] Contamination of drinking water, either through industrial pollutants or effluents from agriculture has an impact on public health at large, whether it be in an urban or rural context. Hazards to public health do not take into consideration any categorisation of urban versus rural; they proliferate where monitoring is poor, and standards inadequate.[11] This research paper, aims to provide a comprehensive understanding of the domestic and international regulatory framework for governing the quality of drinking water, as well as its jurisprudential dimension by analysing key precedents, including the recent "Luxury Litigation" judgement. It seeks to highlight the profound lacunae between India's present environmental law standards, and the actualities of modern CECs.

Review of Literature and Research Gaps

The literature surveyed for this paper on safe drinking water reveals comprehensive information on the subject matter. This review identifies key works from five prominent authors across legal and scientific domains. Each study employs distinct doctrinal, statutory, or empirical methodologies that inform this research.

The right to safe and clean water in India has emerged as a critical area of legal and environmental research consisting of constitutional jurisprudence, statutory frameworks and scientific insights. Existing literature on this subject falls primarily into three themes: scientific and regulatory concerns pertinent to emerging contaminants in water, judicial recognition of water as a fundamental right, and lastly, policy and administrative challenges.

This literature review seeks to:

[10]"All luxury litigations": SC declines to hear PIL on packaged drinking water standards, THE INDIAN EXPRESS (2025), https://indianexpress.com/article/legal-news/all-luxury-litigations-sc-declines-to-hear-pil-on-packaged-drinking-water-standards-10426790/.
[11]Shah, *supra* note 7.

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1. Better the understanding of the present subject matter;
2. Analyse available literature on this topic;
3. Distinguishdifferent research scholars in this context; and
4. Identify the research methodology utilised in the previous scholarly papers.

1. The author while carrying out research in order to write this paper analysed "A Review on Emerging Contaminants in Water: Classification, Sources and Potential Risks",[12] written by Alexandros I. Stefanakis. This review classifies the emerging pollutants and its sources. It assesses the various pathways through which emerging contaminants enter surface or ground level water, and subsequently elucidates upon the associated risks to human and aquatic life.
2. The authors further drew inference from "A Review on Emerging Contaminants in Indian Waters and Their Treatment Technologies",[13] written by S. Kanmani and Riya Ann Mathew which covered the recently detected emerging contaminants in water bodies in India. They evaluated advanced treatment technologies alongside existing gaps in the regulatory statutes.The study employs qualitative literature review and source analysis for practical solutions.
3. "Water as a Fundamental Right: A Perspective from India"[14] by Vrinda Narain was also analysed by the authors. The paper's theme was set around judicial evolution of right to water under Article 21 through the scope of various judicial precedents. The paper critiques privatisation trends against the public trust doctrine asserting state's obligation to preserve water for public good.
4. The authors also referred to "The Right to Water: A Constitutional Perspective"[15] by Jayna Kothari. The paper facilitated an analysis of constitutional recognition of water as a legal right,drawing inferences from international and Indian precedents. The paper also discussed positive-state obligations via analogies of various precedents.

[12]Alexandros I. Stefanakis, *A Review of Emerging Contaminants in Water: Classification, Sources, and Potential Risks*, *in*WASTE MANAGEMENT 177.
[13]Riya Ann Mathew & S. Kanmani, *A Review on Emerging Contaminants in Indian Waters and Their Treatment Technologies*, 19 NAT. ENVIRON. POLLUT. TECHNOL. 549 (2020).
[14]Vrinda Narain, *Water as a Fundamental Right: A Perspective from India*, 34 VT. LAW REV.
[15]Jayna Kothari, *The Right to Water: A Constitutional Perspective*, https://www.ielrc.org/activities/workshop_0612/content/d0607.pdf.

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5. Lastly, the authors have also analysed "Right to Safe Drinking Water: Indian Legal Perspective"[16]authored by Nisha Parekh wherein the author surveys statutes including Water (Prevention and Control Pollution Act) 1974,[17] and Indian Easements Act, 1822[18] on groundwater rights. The author analyses the application of polluter pays principle and precautionary principle through judicial precedents.

Research Gaps

Thesepresent literatures fail to bridge the gap between effective solutions through scientific development and enforceable regulatory framework required to curb the detrimental effects of emerging pollutants. They present a contextual gap since they lack in offering a contemporary perspective of judicial activism and interaction in the domain of the right to water, which the present paper seeks to fill through the analysis and relevance of the "luxury litigation" judgement.

Research Questions

1. Do Indian standards adequately regulate emerging contaminants as compared to the international benchmark?
2. Does the "luxury litigation" judgement of 2025 prioritise access of water over quality under Article 21?
3. What reforms are required to align water standards in India with international norms for emerging contaminants?

Hypothesis

The advancement of rapid technological and industrial developments is followed by the equally fast-paced growth of emerging contaminants in water resources. Such contaminants constitute a bracket of pollutants that although exist in the environment, are not yet regulated or controlled. These contaminants comprise varying substances such as products relating topersonal hygiene, pharmaceuticals, nanomaterials and products for personal care. The absence of comprehensive statutory regulations governing such pollutants is due to lack of

[16]Nisha Parekh, *Right to Safe Drinking Water: Indian Legal Perspective*, 6 J. POSIT. SCH. PSYCHOL. 10098 (2022).
[17] The Water (Prevention and Control of Pollution) Act, 1947, No. 6, Acts of Parliament, 1974 (India).
[18]The Indian Easements Act, 1882, No. 5, Acts of Parliament, 1882 (India).

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data pertaining to their consequences on the environment and the health of humans.[19] Aid from the judiciary by perpetual enlargement of the right to life to encapsulate within itself the right to safe drinking water proves to be insufficient without the assistance of any sound legislation. Thus, there is a requirement to amend existing water quality standards in order to make them stringent and on par with global regulations, and provide solid legislative support in order to ensure that the citizens can not only easily avail water, but ultimately consume clean water.

Research Methodology

The researchers have followed a mixed research methodology by collecting data by utilising both the doctrinal, as well as non-doctrinal method. The researchers have collected data from primary and secondary sources. Primary sources include "Indian Standards" issued by BIS "Food Safety and Standards (Prohibition and Restriction on Sales) Regulation, 2011"[20] and other judicial precedents delivered by the High Courts and the Supreme Court of India. Secondary data is collected from articles, journals and reliable web sources. Survey data was collected through a form that was shared with persons aged 20-21 years. A total of 15 respondents partook in the survey.

Analysis

Emerging Contaminants in Drinking Water

The issue of drinking water contamination has gained increased global attention in recent years due to the emergence of a new category of contaminants which were previously unregulated and unmonitored. In recent times, scientific research has identified a broad spectrum of substances known as CECs, popularly known as the emerging contaminants.[21] These substances may occur naturally, or in the form of synthetic chemicals whose presence in water distribution systems has recently been detected. Their potential risks to human health and environment remain under-examined. Emerging contaminants are therefore, in most

[19]Xingyu Li et al., *Ecotoxicology and Environmental Safety Comprehensive review of emerging contaminants : Detection technologies , environmental impact , and management strategies*, 278 ECOTOXICOL. ENVIRON. SAF. 116420 (2024), https://doi.org/10.1016/j.ecoenv.2024.116420.
[20] Food Safety and Standards (Prohibition and Restriction on Sales) Regulation, 2011.
[21]Stefanakis, *supra* note 10.

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cases, characterised by the growing recognition of their potential ecological and hazardous impact to the environment and its living beings.[22]

These emerging contaminants comprise a wide range of chemical substances originating from industrial, pharmaceutical, agricultural and domestic activities carried out on a daily basis. Examples of common categories include pharmaceuticals such as chemotherapy agents, antibiotics, lipid regulators, personal-care products, pesticides, flame retardants, surfactants, plasticizers, artificial sweeteners, endocrine disrupting substances and nanomaterials.[23] These substances often enter the water bodies through various pathways such as industrial effluents, waste water discharge, agricultural pollution and improper disposal of household medicines and chemicals. These compounds persist in aquatic environments and contaminate drinking water on surface level and also through groundwater infiltration.[24]

One such widely studied emerging contaminants are endocrine-disrupting chemicals, which pose risks associated with hormonal interference in humans and wildlife. These substances usually block hormonal receptors or disrupt hormonal synthesis and metabolism. Industrial chemicals such as bisphenol A, synthetic hormones used in pharmaceuticals, and certain pesticides have been identified as prominent endocrine disruptors in aquatic ecosystems.[25] The presence of such compounds, even at low concentrations, pose great threat to human health, especially when subjected to prolonged exposure. These endocrine disrupting chemicals are often unregulated and not included in routine water monitoring standards, thereby, urging urgent regulation and monitoring to minimise its hazardous effects.[26]

The challenge associated with emerging contaminants is that conventional water treatment mechanisms are not designed to cater to the effective removal of such harmful compounds in the water. Traditional treatment practices such as sedimentation, coagulation, and filtration are usually effective for removal of pathogens and other conventional pollutants, but not effective for removal of emerging contaminants. As a result, there is an increasing need to

[22]Frederick Wendell Pontius, *Emerging Contaminants in Water: Detection, Treatment, and Regulation*, MDPI (2021).
[23]Ahsan Saif Ullah et al., *A Localized Assessment of Groundwater Quality Status Using GIS-Based Water Quality Index in Industrial Zone of,* MDPI (2022).
[24]Ishrat Bashir et al., *Concerns and Threats of Contamination on Aquatic Ecosystems*, *in*BIOREMEDIATION AND BIOTECHNOLOGY 1 (2020).
[25]Ann Mathew and Kanmani, *supra* note 11.
[26]K. S. Uplabdh Gopal, *Endocrine Disruptors in India's Drinking Water*, (2025), https://www.orfonline.org/expert-speak/endocrine-disruptors-in-india-s-drinking-water.

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adopt and implement advanced technologies such as advanced oxidation processes and membrane filtration, amongst other methods to address such contaminants.[27]

Advancements in various data analysis tools have played a vital role in identifying the existence of such emerging contaminants. The implementation of complex detection methods including advanced chromatography and spectrometry techniques effectively facilitates researchers to detect pollutants present generally at extremely low concentrations, often measured in nanograms or micrograms per litre. It is essential to note that although the concentration of such pollutants might appear minimal, scientific studies highlight that long term exposure to certain contaminants may pose a serious threat to human health, resulting in reproductive disorders, antibiotic resistance, endocrine disruption and various other chronic illnesses.[28]

An additional challenge posed by these emerging contaminants is their high resistance to degradation and bioaccumulative potential. Most of these emerging contaminants are resistant to and accumulate in aquatic organisms, thereby entering the food chain through such pathways, ultimately affecting human health.[29]Presently, many of these contaminants remain unregulated and outside the ambit of traditional water quality monitoring inspections, thereby highlighting the pressing need for stringent assessment standards and regulatory agencies ensuring effective implementation.

Standards for Assessing Drinking Water in India

Safe and clean drinking water is an elemental requirement for human well-being. Approximately 780 million people in the countrycannot access clean and safe water for the purpose of consumption. Resultantly, roughly 6-8 million people lose their lives each year owing to diseases stemming from the consumption of contaminated water. Drinking water quality differs substantially across varying regions, and this differentiation is a result of a host

[27]Kumbhakarna Mallik, Dr. Abhijeet Das & Dr. Krishna Pada Bauri, *Comprehensive Assessment of Emerging Contaminants in Drinking Water Supplies: Occurence, Sources, Human Health Implications, and Regulatory Challenges*, 36 MSW MANAG. J. (2026).

[28]Rohitashw Kumar et al., *Case Studies in Chemical and Environmental Engineering Case Report A review on emerging water contaminants and the application of sustainable removal technologies*, 6 CASE STUD. CHEM. ENVIRON. ENG. 100219 (2022), https://doi.org/10.1016/j.cscee.2022.100219.

[29]Geonildo Rodrigo Disner & Shafi Mohammad Tareq, *Editorial: Emerging water contaminants in developing countries : detection , monitoring , and impact of xenobiotics*, 7 (2025), https://www.frontiersin.org/journals/water/articles/10.3389/frwa.2025.1584752/full.

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of factors, including manufacturing activities, urbanisation, and farming practices.[30] In order to guarantee clean and safe water for consumption, assessment of the quality of water resources, and the efficacy of water conditioning by adhering to standards chalked out for this purpose, is essential.

BIS has substantiated "IS 10500: 2012" as the accepted standard for the quality of drinking water in India. This was initially enforced in 1983, and was titled "Indian Drinking Water Specification" and has since been subjected to numerous amendments. These amendments were carried out bearing in mind the characteristics and aggregation of pollutants in drinking water. In order to secure the conveyance of good quality water, and safeguard against detrimental pollutants, frequent examination and inspection of drinking water is carried out by Jal Boards and other entities supplying water. The regularity of such inspections is ascertained by the quality of the water, and it may analyse changes in colour or taste and impurities.

The Central Ground Water Board delineates that IS 10500: 2012 encompasses "Uniform Drinking Water Quality Monitoring Protocol" provisions. The standard is restricted to either permissible limits or acceptable limits. BIS will hold water incapable for consumption if it is degraded bacteriologically or if its contamination level surpasses the allowable limit.[31] IS 10500: 2012 contains six tables elaborating upon varying facets of water quality, and specifying the required, that is, acceptable limit, and in case of absence of an alternative source, the permissible limit. Table 1 comprises the "Organoleptic and Physical Parameters", Table 2 contains the "General Parameters Concerning Substances Undesirable in Excessive Amounts", Table 3 encompasses the "Parameters Concerning Toxic Substances", Table 4 includes the "Parameters Concerning Radioactive Substances", Table 5 covers the "Pesticide Residues Limits and Test Method", and lastly, Table 6 presents the "Bacteriological Quality of Drinking Water". Each of these tables provide varying characteristics and the permissible

[30]K C Karthik et al., *Assessment of Drinking Water Quality in Various Parts of India - A Review*, 2 AJ J. MED. SCI. 1 (2025).
[31]Indian standards for drinking water: What you need to know, https://www.pureitwater.com/blog/post/standards-for-drinking-water-in-india?srsltid=AfmBOoouVx2gqXhJ6Wfb4cBaHINKR_Ocuq8lLnKH7_zia1utwM-zyeDF.

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limit for each of such characteristics, or prescribe varying tests that can be referred to, as well as the requirements to be fulfilled for the water to be fit for drinking.[32]

In India, the sale of natural mineral water and bottled drinking water is controlled by the "Food Safety and Standards (Prohibition and Restriction on Sales) Regulation, 2011".[33] These regulations stipulate that bottled drinking water must comply with the standards mentioned in IS 14543: 2016, and natural mineral water shall meet the requirements mentioned in IS 13428: 2005.[34] BIS credentials for packaged drinking water are crucial as they constitute official evidence that the drinking water purchased by a consumer is safe for consumption and adheres to the standards decided by the government. This certification has to be acquired by all suppliers, manufacturers, sellers, and bottling companies. IS 14543: 2016 enunciates that no bottled water can be marketed in India without first obtaining the "Indian Standards Institution" mark from BIS. Such certification guarantees that the water being sold is in compliance with all the quality, safety, and hygiene requirements. All the companies selling bottled water, whether domestic or international, must first comply with this certification requirement.[35]

IS 14543: 2016 prescribed standards for jars, bottles, and other such containers. It lays down the thresholds for different factors to be considered to ensure that the water is safe for consumption. It outlines the physical criteria, including "Turbidity" and "Total Dissolved Solids". Microbiological criteria are also described, while laying down the limits for impurities such as mold, yeast, and E. coli to ensure that no harmful fungi and bacteria are present. Specifications pertaining to chemicals, including pH are also taken into account, while prescribing limits to ensure that their levels are kept in check. This standard also tackles the radioactive residues and pesticides that may be present in the water by prescribing limits to protect against the injurious effects of such substances.[36] Additionally, it also

[32]Indian Standard Drinking Water - Specification (Second Revision), https://law.resource.org/pub/in/bis/S06/is.10500.2012.pdf.
[33]Food Safety and Standards (Prohibition and Restriction on Sales) Regulation, 2011, Gazette of India, pt. III (Aug. 1, 2011).
[34]Ritika Rathor, *BIS Mark Certification For Packaged Drinking Water IS: 14543*, https://axiscomplience.in/blogs/bis-certification-for-packaged-drinking-water-is-14543/.
[35]Rajat Rawat, *BIS Certification for Packaged Drinking Water: Under IS 14543*, (2026), https://www.diligencecertification.com/bis-for-packaged-drinking-water/.
[36]Kothari, *supra* note 13.

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prescribes tests for the actual packaging material itself to check its safety and to ensure that it does not release any unhealthy chemicals into the water.

It also sets out the frequency of testing and sampling that the packaged water producers are required to adhere to. This ensures frequent observation of the quality of the water.[37] Other notable standards that are required to be met in terms of marking and packaging include clear and permanent information on each label, bottle, container and, or printed directly on the pouch. This information covers details such as name of the product, full address and name of the manufacturer, name of the brand, code or batch number, processing or packing date, date of expiry, net quantity, instructions for storage, symbol of recycling as per IS 14535, and any additional information prescribed by the Legal Metrology (Packaged Commodity) Rules, 2011,[38] and the Food Safety and Standards (Packaging and Labelling) Regulations, 2011.[39]

The table below contains results of a test carried out by Consumer Voice in 2020, comparing 7 brands of bottled drinking water. The parameters of this test were based off the Indian Standard (IS 14543: 2016).

Rank	**Total Score Out of 100 (rounded off)**	**Brand**	**Net Volume (in liters)**	**MRP (in Rupees)**	**Best Before (in months)**	**Manufactured/ Marketed by**
1	94	Bisleri	1L	20	6 months	Bisleri International Pvt. Ltd.
2	93	Bailey	1L	20	6 months	Parle AgroPvt. Ltd.
3	93	Rail Neer	1L	15	6 months	IRCTC
4	93	Kingfisher	1L	20	6 months	Ghai Overseas
5	91	Bonaqua	1L	20	12 months	Hindustan Coca Cola Beverages Pvt. Ltd.

[37]Packaged Drinking Water Testing for BIS Compliance, (2024), https://www.cotecna.com/media/news/packaged-drinking-water-testing-for-bis-compliance.
[38] Legal Metrology (Packaged Commodity) Rules, 2011, Gazette of India, Extraordinary, pt. II (Mar. 7, 2011).
[39]Food Safety and Standards (Packaging and Labelling) Regulation, 2011.

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6	91	Kinley	1L	20	12 months	Moon Beverages Ltd.
7	89	Aquafina	1L	20	9 months	Varun Beverages Ltd.[40]

However, it becomes highly pertinent to note that in October, 2024, the Government discarded the compulsory acquisition of the BIS certificate for manufacturers to be able to sell their packaged water in the markets, as an attempt to simplify regulatory obligations. In order to still uphold its stringent standards to ensure safety, the FSSAI altered its "Risk-Based Inspection Policy" to incorporate bottled mineral and drinking water under "high-risk categories". This amendment ensures that doing away with BIS certification does not in any manner affect the safety and quality of the water. Under this newly introduced regulatory framework, manufacturers are now required to undergo "Annual Risk-Based Inspections" by officials of the FSSAI, "pre-licensing inspections" before any registration or license is granted to them, and annual auditing by FSSAI-recognised subcontractors for centrally licensed producers in high-risk categories. This classification of packaged water as a high-risk product ensures that strict safety and quality standards are maintained, while the removal of dual certification signifies the Government's attempt to make the process of compliance easier for manufacturers.[41]

The regulations concerning water quality and standards in India have undergone significant amendments. These changes point towards the convergence of interests, between ensuring that the water is safe for consumption and making the process of regulatory compliance easier for organisations. In 2024, the requirement of procuring a BIS certificate, which bore the ISI mark ceased, paving way for carrying out the "Risk-Based Inspection" policy by FSSAI. While relegating packaged water to the high-risk category aims at compensating for the removal of the dual-certification requirement, it consequentially increases the workload for the FSSAI, raising questions over the accuracy and dependability of the inspections carried out by it.

[40]Packaged Drinking Water Are you choosing the safest one?, https://consumeraffairs.gov.in/public/upload/admin/cmsfiles/consumer_products/Packaged_Drinking_Water_consumer_products.pdf.

[41]PACKAGED DRINKING WATER CLASSIFIED AS HIGH RISK FOOD, https://www.iasgyan.in/daily-current-affairs/packaged-drinking-water-classified-as-high-risk-food.

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Preferring ease of administration over strict quality checks likely generates questions over the safety and well-being of consumers, and further exposes the system to misuse by subpar entities. Such structural inefficiencies presented a captivating opportunity for the Supreme Court to direct stricter standards to uphold the quality of drinking water consumed by citizens in the country at large. However, rather than scrutinsing whether existing regulatory standards are actually insufficient or not, the Court cited phrases such as "urbanised phobia" while ultimately dismissing the petition. It underlined the prevalent socio-economic differences, recommending that the primary focus must remain ensuring access to clean drinking water for all.

Constitutional Provisions and Judicial Precedents for Access to Safe Drinking Water in India

Water is a vital requirement for sustaining human life. However, the progression of the right to water in India remains sluggish.[42] Notwithstanding that the "right to water" is not an explicitly guaranteed fundamental right in the Constitution, the Apex Court of the country has over the recent past ingeniously carved out the "right to water" from the broader right to life.[43] The judiciary plays a key role in interpreting existing legislations in a manner that furthers steady development, while preserving the existing environment. Through the mechanism of judicial activism, courts have produced a number of fundamental rights that are innate in the Constitution, but are not explicitly specified.[44]

The constitutionally guaranteed right to safe potable water can be extracted from the "right to a clean environment",[45] the "right to health",[46] and the "right to food", and all of these have been ensured beneath the extensive umbrella of the "right to life", under Article 21 of the Constitution.[47][48] In Narmada Bachao Andolan,[49] the Court, while allowing the Government to build 3,000 dams on the river Narmada, underlined that water is a fundamentalnecessity for

[42]Dr. Anjali B. Bondar, *Safe Drinking Water in India: Constitutional and Judicial Perspective*, V GAP BODHI TARU 16 (2022).
[43]Narain, *supra* note 12.
[44]Nazia Sultana Laskar, *Role of Indian Judiciary in ensuring safe drinking water for all.*, 10 INT. RES. J. HUM. RESOUR. SOC. SCI. 43 (2023).
[45] M.C. Mehta v. Union of India (Shriram - Oleum Gas), (1987) 1 SCC 395.
[46]Bandhua Mukti Morcha v. Union of India, (1984) 3 SCC 161.
[47]The Constitution of India, 1950, Art. 21.
[48]Kothari, *supra* note 13.
[49] Narmada Bachao Andolan v. Union of India, (2000) 10 SCC 664.

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the survival of human life, and that it forms part of the "right to life and human rights" under Article 21. Additionally, the Supreme Court has proactively applied the "precautionary principle" to avert the likely pollution of sources of drinking water resulting from industrial development.[50]

Thus far, the right to clean potable water remains safeguarded by the judiciary only as a negative right by virtue of the right not to have the sources of drinking water be polluted. There exist several legislations pertaining to water and aquatic resources that provide for the supply of water for the purpose of consumption, irrigation for the purpose of agriculture, as well as rehabilitation of those facing the consequences of water resource management schemes. Despite the enactment of these laws, none of them contain an express "right to water".[51] However, the judiciary of the country has continually made an attempt to conform itself to the ever-changing landscape of the country, and to introduce required changes in society.[52]

In Subhash Kumar v. State of Bihar,[53] the question that arose for the consideration of the Court is whether the right to unpolluted water finds its place within the broader ambit of the right to life as guaranteed by Article 21. The Court upheld this right in a protectionist manner by stating that the "right to full enjoyment of life" encompasses the "right of enjoyment of pollution-free water and air". The Supreme Court, while delivering a subsequent judgement, declared water to be "a gift of nature" and upheld the right to access water for the purposes of consumption, and stated unequivocally that activities other than those for the purpose of consumption, shall not deny or pose a hurdle to the right of enjoyment of water for drinking purposes.[54] In A.P. Pollution Control Board II v. Prof. M.V. Nayudu,[55] the Court highlighted

[50] M.C. Mehta v. Union of India, (1998) 2 SCC 438; M.C. Mehta v. Kamal Nath, (1997) 1 SCC 388; S. Jagannath v. Union of India, (1997) 2 SCC 87; A.P. Pollution Control Board II v. Prof. M.V. Nayudu, (2001) 2 SCC 62.
[51] Parekh, *supra* note 14.
[52] P. N. Bhagwati, *The Role of the Judiciary in the Democratic Process: Balancing Activism and Judicial Restraint*, 18 COMMONW. LAW BULL. 1262 (2010), https://www.tandfonline.com/doi/abs/10.1080/03050718.1992.9986224.
[53] Subhash Kumar v. State of Bihar, (1991) 1 SCC 598.
[54] Delhi Water Supply & Sewage Disposal Undertaking v. State of Haryana, (1996) 2 SCC 572.
[55] A.P. Pollution Control Board II v. Prof. M.V. Nayudu, (2001) 2 SCC 62.

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the State's "positive duty" to act,[56] and underscored the State's obligation to provide clean drinking water to its citizens.

In a landmark case, the Court once again, ruled against interference with water resources, and directed those polluting groundwater as well as other sources of water to discontinue their activities that result in water contamination either directly or indirectly. While applying the "Public Trust Doctrine", the Court declared that water is a common property that is held by the State in public trust in furtherance of fulfilling its obligation to respect the principle of intergenerational equity.[57] The Court, while exercising its judicial activism in M.C. Mehta v. Union of India (Shriram - Oleum Gas),[58] underlined the significance of the Water (Prevention and Control of Pollution) Act, 1974,[59] which helps in ensuring water standards. The Court has also actively awarded compensation to those affected by water-polluting activities carried out by tanneries.[60]

The advancement of the "right to water" in India discloses a heavy reliance on judicial activism to make up for the lack of legislative provisions. While the Supreme Court has creatively enlarged Article 21 to include the right to pollution-free water, this expansion essentially functions as a negative right, preserving sources of water from pollution, rather than actively levying a motivated, legal duty on the government to ensure equitable access. Inculcation of doctrines such as the public trust doctrine, and the precautionary principle, although crucial for the protection of the environment, are deficient in laying out express and material standards required for strict and regular quality control. As a result, the legal scenario of India remains strong in punishing those who pollute, but frail in regulating what actually constitutes "safe drinking water.

The "Luxury Litigation" Judgement

The dismissal of Sarang Vaman Yadwakar v. Union of India& Ors.[61] in December 2025by the Apex Court exemplifies a clearshift in judicial priority. By labelling the plea for

[56]Sneha Agarwal, *Judicial and Statutory Remedies for Water Contamination in India*, (2026), https://www.thementorshipproject.in/blog-details/UDYINA==/JUDICIAL-AND-STATUTORY-REMEDIES-FOR-WATER-CONTAMINATION-IN-INDIA.
[57] M.C. Mehta v. Kamal Nath, (1997) 1 SCC 388.
[58] M.C. Mehta v. Union of India (Shriram - Oleum Gas), (1987) 1 SCC 395.
[59]Parekh, *supra* note 14.
[60] Vellore Citizens' Welfare Forum v. Union of India, (1996) 5 SCC 647.
[61] Sarang Vaman Yadwadkar v. Union of India & Ors., W.P.(C) No. 1222/2025.

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implementation of stringent safety regulations of packaged water or PET bottles as "luxury litigation", the judiciary indicates a clear preference for addressing baseline resource scarcity over the adjudication of safety standards. This approach overlooks the regulatory control required to prevent environmental degradation caused by PET bottle waste and chemical leaching.[62]

A bench comprising Justice Joymalya Bagchi along with Chief Justice Surya Kant characterised the plea that sought to align Indian packaged water standards with international benchmarks from the United States, European Union, and Japan as an expression of an "urban-centric mindset". The Court observed that a significant portion of India's population residing in the rural area, even today, struggles with basic access to potable water and thereby questioned the relevance of invoking constitutional remedies to regulate the quality standards of bottled water, which, per the learned Court, is largely consumed in urban areas. The Bench emphasized on the prevailing socio-economic realities of India and held that safety standards of packaged water could not be prioritised over the pressing challenge of ensuring access to drinking water.[63]

The Petitioner emphasized heavily upon the statutory requirement under Section 18(2) of the Food Safety and Standards Act, 2006, wherein regulatory authorities are obligated to frame safety standards and regulations with due regard to the international frameworks, unless the existence of any scientific justification requires otherwise.[64] It was argued that regulatory authorities responsible for prescribing permissible limits of substances such as antimony and DEHP in PET bottles were unsuccessful in harmonising the domestic safety standards with globally recognised safety measures. In consequence, the petitioner highlighted the adverse impact on the health of consumers caused due to the prolonged consumption of packaged drinking water.[65]

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[62]Suchitra Kalyan Mohanty, *Plea on enhancing quality of packaged drinking water: Luxury litigation, says SC*, THE NEW INDIAN EXPRESS (2025), https://www.newindianexpress.com/nation/2025/Dec/19/plea-on-enhancing-quality-of-packaged-drinking-water-luxury-litigation-says-sc.

[63]Supreme Court Calls Plea on Packaged Drinking Water Standards "Luxury Litigation" Amid Widespread Water Scarcity, THE LAW ADVICE (2025), https://www.thelawadvice.com/news/supreme-court-calls-plea-on-packaged-drinking-water-standards-'luxury-litigation'-amid-widespread-water-scarcity.

[64]Food Safety and Standards Act, 2006, § 18(2), No. 34, Acts of Parliament, 2006 (India).

[65]Utkarsh Anand, *Supreme Court junks 'luxury' plea over packaged water*, HINDUSTAN TIMES (2025), https://www.hindustantimes.com/india-news/supreme-court-junks-luxury-plea-over-packaged-water-101766086114645.html.

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From a legal perspective, the Court's reluctance to assess this matter of emerging contaminants showcases limited judicial intervention in specialised regulatory matters. Prioritizing the issue of access to drinking water upon the scrutiny of safety standards governing packaged water reflects a hierarchical interpretation of the right to water within the broader framework of Article 21. Furthermore, Indian environmental law has traditionally recognised the concept of precautionary principle that obligates the regulatory bodies to foresee and prevent potential risks to public health, even in the absence of scientific certainty. The Court has delineated several judicial holdings whichaffirm the relevance of precautionary principle as an essential component of environmental governance, emphasising on the obligation of the regulatory authorities to anticipate, prevent and mitigate the potential environmental harm even in cases with no scientific evidence.[66] In a similar manner, the threat posed by chemical leaching from PET bottles and long-term exposure to such substances like antimony and DEHP are potentially likely to fall within the scope of precautionary regulatory scrutiny.

The Court's disclination to elucidate upon the potential harm caused by such emerging contaminants risks the potential long-term effect on ecological sustainability and human health. In light of these regulatory deficiencies, it is essential to examine the broader international regulatory framework and standards that evaluate these emerging contaminants in water.

International Regulatory Framework and Standards

The evolution of drinking water safety standards is increasingly shaped by international institutions' framework and scientific research that establish certain standards for water quality. A key role in this regard is performed by the "Guidelines for Drinking Water Quality" issued by the World Health Organisation.[67] These guidelines provide for globally recognised standards for the permissible concentrations of microbiological, chemical and radiological contaminants in drinking water and serve as reference for national governments while formulating their own domestic standards. The WHO framework also emphasises on a preventive and risk-regulated management approach through adoption of water safety plans

[66] A.P. Pollution Control Board II v. Prof. M.V. Nayudu, (2001) 2 SCC 62; Democratic Youth Federation of India v. Union of India, (2011) 15 SCC 530; M.C. Mehta v. Union of India, (1997) 2 SCC 353; Vellore Citizens' Welfare Forum v. Union of India, (1996) 5 SCC 647.
[67] *Hereinafter referred to as "WHO".*

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that focus on identification of hazardous compounds, comprehensive risk assessment and effective management and monitoring of water supply systems.[68] This preventive approach by WHO demonstrates the growing global consensus that national governments must focus on prioritising public health protection through systematic preventive measures rather than merely responding to the after effects of such contaminants.

In the United States, drinking water regulation is primarily governed by the "Safe Drinking Water Act" regulated by the United States Environmental Protection Agency.[69] Under this framework, the Environmental Protection Agency sets a mandatory, legally binding standard known as the "Maximum Contaminant Levels (MLCs)" for various pollutants present in the public water systems. The Act also comprises regulatory instruments such as the "Contaminant Candidate List" and the "Unregulated Contaminant Monitoring Rule", both of which mandate the authorities to monitor and assess the emerging contaminants that may require impending standards.[70] It is evident through these legislative aspects, that the United States adopts a precautionary and scientific research based approach that evolves with the findings of scientific research and actively integrates it into the governing legislation of drinking water.

The European Union regulates the drinking water Safety standards under the "Drinking Water Directive (Directive (EU) 2020/2184)" as implemented by the European Commission.[71] The Directive primarily sets forth legally binding standards for various contaminants and requires its member states to mandatorily undertake regular monitoring of water quality. It is pertinent to note that the revised Directive incorporates provisions addressing emerging pollutants, including that of endocrine-disrupting chemicals, microplastics, pharmaceuticals. One of its primary objectives also include provision of adequate and appropriate information pertinent to drinking water quality, which ultimately promotes transparency and awareness. This Directive is the first European legislation following a European citizens initiative, which is a European democratic participatory tool

[68]Guidelines for drinking-water quality, https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content.
[69]The Safe Drinking Water Act, (1996), https://www.govinfo.gov/content/pkg/CPRT-106SPRT67528/pdf/CPRT-106SPRT67528.pdf.
[70]Drinking Water Regulations, https://www.epa.gov/dwreginfo/drinking-water-regulations#:~:text=Overview,Unregulated contaminants.
[71]E.U. Directive 2020/2184, *Quality of Water Intended for Human Consumption*, December 16, 2020, O. J. E. U. L-435.

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launched through the "Right to Water" initiative. It also derives its foundation from a risk-based approach while complying and inheriting certain aspects from the Water Safety Plan.[72]

In addition, Japan regulates its drinking water standards through the "Water Supply Act", which is administered by the Ministry of Health Labour and Welfare, and similar to other legislations in this regard, it prescribes stringent standards for chemical and microbiological and mandates regular monitoring of the water utilities.[73] The framework has been amended to incorporate the emerging scientific developments on contaminants such as heavy metals, pesticides and endocrine-disrupting substances. Japanese regulatory bodies have actively facilitated research in the field of advanced water treatment technologies and improved detection instruments to identify and address concerns pertinent to such emerging contaminants.[74]Scientific research has significantly moulded the landscape of international regulatory frameworks on water contaminants. Various studies carried out in this regard have repeatedly demonstrated the growing presence of endocrine-disrupting chemicals, pesticides, harmful medical water, plastic-additives and PFAs which termed as "forever chemicals", all of which pose a serious threat and cause irreparable damage to the environment if not regulated and prevented at the earliest.[75]

Conclusion, Findings and Suggestions

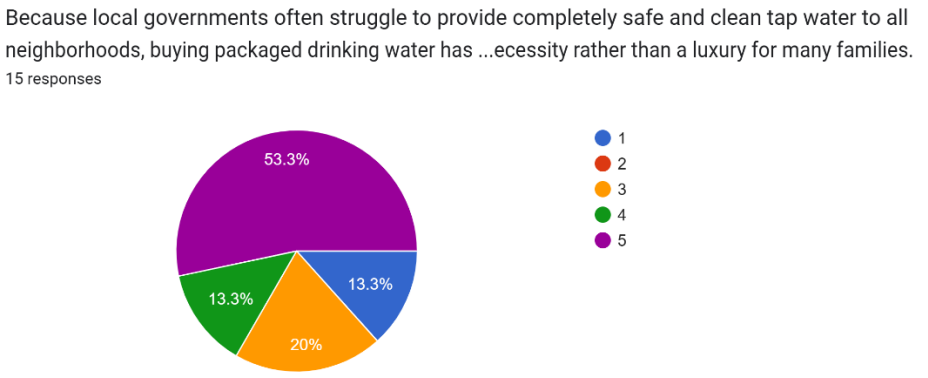
Findings

The primary data gathered for the purpose of this research paper provided certain insights on the layman perception of existing water quality standards present in India. The survey has affirmed that modern emerging contaminants pose a significantly higher perceived, if not actual hazard to human health than older issues such as bacterial infestation. With the assistance of this study, it has been deduced that deeming the issue of lacking water quality standards in the country as "luxury litigation", and an "urbanized phobia" may provide excessive leeway to the companies manufacturing bottled water, and allow them to abstain

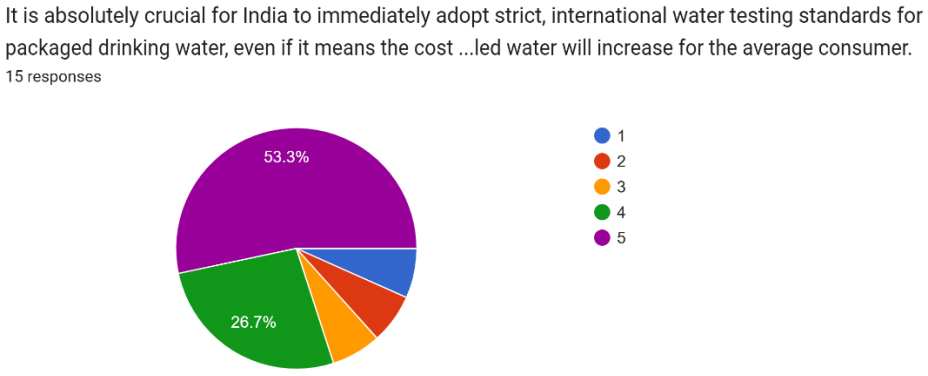
[72]Drinking water, https://environment.ec.europa.eu/topics/water/drinking-water_en.
[73]Water quality, https://www.mhlw.go.jp/english/policy/health/water_supply/4.html.
[74]Revision of Drinking Water Quality Standards in Japan, https://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0264pdf/ks0264011.pdf.
[75]Manoj Kumawat et al., *Occurrence and seasonal disparity of emerging endocrine disrupting chemicals in a drinking water supply system and associated health risk*, SCI. REP. 1 (2022), https://doi.org/10.1038/s41598-022-13489-3.c

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from upholding required quality of packaged water. Additionally, it has also been well-established through the survey that there has arisen a pressing need to enforce stringent water testing standards that align with the international frameworks, even if this increases the price of such packaged water. The same is depicted below, where 53% of the respondents strongly agree with the above proposition, and 26.7% agree with the same.



Based on the suggestions of the respondents,it is required of the Indian judiciary to apply similar constitutional principles while evaluating private entities manufacturing bottled water as enforced while examining public bodies supplying water. This also demands that citizens are actively made more aware about the probable presence of chemical pollutants in their bottled water, as evidenced by about 86.7% of the responders, who agreed with the argument that the average consumer is not provided adequate information about the aforementioned. Lastly, 10 out of the 15 respondents agree with the postulation that owing to the lack of safe drinking water sources provided by the state, packaged drinking water is no longer a luxury, but a necessity for many.



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Conclusion and Suggestions

The jurisprudence surrounding protection of water resources in India is largely dependent on judicial activism exemplified by landmark cases as discussed, which aim at establishing water as a resource preserved through the public trust doctrine and affirm the principle of intergenerational equity. Through the aid of public trust doctrine and precautionary principle, the judiciary has restricted pollution of aquatic resources, and held various industries accountable for causing environmental degeneration or harm. These precedents, however, lack the positive obligation needed to mandate the State to supply safe drinking water, thereby creating a regulatory gap in ensuring consistent water quality and equitable access of water across the country.Current Indian environmental jurisprudence is seen predominantly applying the polluter pays principle, which proves inadequate against regulating matters pertinent to emerging contaminants due to their diffused sources and delayed health effects. The absence of tenets of precautionary principle, which is a better suited approach to tackling the harmful effects posed by emerging contaminants, as opposed to the present application of the principles of polluter pays necessitates immediate legislative reforms.

Domestic initiatives at state levels such as Kerala's ban on single use-plastics, wherein it aims to target plastic consumption at its source as it reduces any pollutants from leaching into the aquatic ecosystems, further preventing them from entering into human bodies, pave the path for amendments of a similar magnitude on a larger scale.[76]This state-widemeasure also addresses the chemical contamination arising from microplastics. Sikkim's stringent regulation of industrial effluents[77] also showcases the proactive measures adopted by states to minimize the harmful effects of any emerging contaminants. Complementary measures inclusive of citizen participation and public transparency as adopted by the EU would facilitate accountability and effective implementation of other such initiatives. Citizen participatory format is vital in tackling the issue of water contamination as it helps in monitoring the water quality and other initiatives such as reporting pollution incidents and participating in consultative processes ensure that the problem can be addressed from a grass-root level beyond just regulatory or statutory implications.

[76]Suo Motu Writ Petition Initiated by the High Court v. State of Kerala, 2025 SCC OnLine Ker 3812.
[77]Discharge of Effluents by Pharma Companies Situated at Singtam, In re, 2025 SCC OnLineSikk 66.

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To further address the existing gaps, it is essential that India codifies a statute tailored specifically to set the standards for assessing water quality as well as incorporate provisions for such emerging contaminants and evolving scientific developments like that of the international legislations. Adopting a precautionary principle by following a risk prevention approach like the United States and EU would help facilitate the anticipation of mitigation of such emerging contaminants in water and ensure in minimizing the harmful effects on the environment. Such a multi-dimensional approach would rightly interpret the broadened horizon of right to water vested under Article 21 by striking an equitable balance between quality and quantity of water resources.

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