Regn. No. S-E/150/Distt.South-East/16.12.2013

INSTITUTION OF WATER & ENVIRONMENT (INDIA)

committed to safe water & sustainable environment....

IWE News Letter

Volume:004 **Number:001** **JAN-MAR, 2026**

NITI Aayog NGO DARPAN REGD ID : DL/2024/0431238

NITI Aayog
Government of India

DARPAN

President
Er. A.K. Srivastava
9717479992
V. President-1
Er. Vijendra Vikramaditya
9911142932
V. President-2
Er. R.K. Garg
9910815451
V. President-3
Er. Sunil Kumar
9411106714
Secretary & DG
Er. T.P.S. Arora
9711772626
DG(Finance)
Er. P.K. Chauhan
9560082609
DG(Publication)
Er. R. M. Kant
9910206424
DG(Activities)
Er. Prabhat Raj
9411106732
DG(Coordination)
Er. Akhil Kumar Mittal
8130422779

WEB SITE :

https://ngodarpan.gov.in

This NGO Darpan portal **enables VOs/NGOs to enrol centrally and thus facilitates creation of a repository of information abot VOs/NGOs, Sector/State wise**. The Portal facilitates VOs/NGOs to obtain a system generated Unique ID, as and when signed.

By registering under Darpan registration, **NGOs will gain access to government schemes, grants, and partnerships, enhancing visibility and credibility**.

दर्पण पोर्टल **वीओ/एनजीओ को केंद्रीय रूप से नामांकन करने में सक्षम बनाता है और इस प्रकार वीओ/एनजीओ के बारे में सेक्टर/राज्यवार जानकारी का भंडार बनाने की सुविधा प्रदान करता है।** पोर्टल वीओ/एनजीओ को हस्ताक्षर करते समय सिस्टम द्वारा जनरेटेड यूनिक आईडी प्राप्त करने की सुविधा प्रदान करता है।

Institution of Water and Environment (INDIA) Registration No.

S-E/ 150 / Distt. South-East/2013

PAN NO.AAAAI7437A

The 29th Council meeting and 7th AGM of IWE (India) was organised at Ganga Jal conference hall on 13th December 2025.

The event was attended by the office bearers of IWE (INDIA) and representatives of various states in good numbers.

The Council meeting and the AGM Of the Institution started with the Address of President, IWE (INDIA) And concluded with the Thanks of the Secretary, IWE (INDIA)

A few Photos of the Meeting





DRINKING WATER AND LEGAL CHALLENGES AROUND "PFAS"

Forever Chemicals, Temporary Laws

PFAS and the Legal Vacuum of Chemical Governance in India

Abstract:

Per- and polyfluoroalkyl substances (PFAS), often referred to as "forever chemicals," present an unusually difficult challenge for environmental regulation because they do not degrade, disperse, or disappear once released. Although scientific research has increasingly linked PFAS exposure to long-term health and ecological harm, legal responses across jurisdictions remain uneven.

This article examines the governance of PFAS from the perspective of Indian environmental law and constitutional interpretation. It argues that the absence of PFAS regulation in India cannot be explained by scientific uncertainty or lack of legal authority. Instead, it reflects a deeper governance failure in which established constitutional principles—particularly the right to life, the precautionary principle, the public trust doctrine, and the polluter-pays principle—have not been translated into chemical regulation.

By bringing together lifecycle-based PFAS science, comparative regulatory approaches, and Indian constitutional jurisprudence, the article reframes PFAS not as a narrow technical problem but as a question of constitutional responsibility. It concludes by identifying legally grounded pathways for precautionary, class-based chemical governance relevant to India and other Global South jurisdictions.

1. Introduction

Per- and polyfluoroalkyl substances (PFAS) have emerged as one of the most persistent environmental contamination challenges of the twenty-first century. Engineered for durability and resistance to heat, oil, and water, PFAS have been incorporated into a wide array of industrial applications and consumer products, ranging from firefighting foams and textiles to food packaging and electronics. These same properties, however, ensure that PFAS resist natural degradation processes, persist indefinitely in environmental systems, and accumulate within human bodies.

Global concern regarding PFAS has grown rapidly over the past two decades. Scientific studies have linked PFAS exposure to adverse health outcomes including endocrine disruption, immune dysfunction, developmental effects, and increased disease risk. In response, several jurisdictions—most notably within the European Global concern regarding PFAS has grown rapidly over the past two decades.

Scientific studies have linked PFAS exposure to adverse health outcomes including endocrine disruption, immune dysfunction, developmental effects, and increased disease risk. In response, several jurisdictions—most notably within the European Union—have begun shifting toward precautionary, class-based regulatory approaches. Yet this global regulatory momentum has not been mirrored uniformly.

India presents a striking paradox. Despite possessing one of the most progressive bodies of environmental jurisprudence in the Global South, PFAS remain legally invisible within Indian environmental law and policy. No PFAS-specific standards exist for drinking water, industrial discharge, product regulation, or waste management. This regulatory silence persists notwithstanding India's constitutional commitment to environmental protection and public health.

This article takes the position that PFAS reveal legal vacuum in India's approach to chemical governance. The problem is not a lack of legal authority or scientific knowledge, but a structural disconnect between science, constitutional doctrine, and regulatory practice. By situating PFAS within a lifecycle-based scientific framework and examining Indian constitutional jurisprudence, this article demonstrates that PFAS regulation is not merely desirable policy but a constitutional necessity.

2. PFAS as a Regulatory Problem: Beyond Toxicity and Pollution Control

Traditional environmental regulation has been shaped by assumptions of environmental assimilation, degradation, and reversibility. Pollutants were expected to dilute, degrade, or be removed through treatment technologies. PFAS fundamentally disrupt this paradigm.

Chemically, PFAS are defined by carbon–fluorine bonds that resist thermal, chemical, and biological degradation. Once released into the environment, PFAS persist for decades or longer, migrating across air, water, soil, and biological systems. Conventional wastewater treatment plants are largely ineffective at removing PFAS, and disposal methods such as landfilling merely transfer contamination into groundwater through leachate.

From a regulatory perspective, this persistence has two critical implications. First, **downstream regulation is inherently inadequate**. Emissions standards and remediation efforts cannot meaningfully address chemicals that cannot be removed once released. Second, **scientific uncertainty regarding individual PFAS toxicity does not negate regulatory urgency**. Persistence itself constitutes harm by imposing irreversible environmental and intergenerational burdens.

A lifecycle-based understanding of PFAS reveals that effective governance must intervene upstream—at stages of chemical approval, product formulation, and market entry—rather than relying on post-contamination control. Regulatory frameworks that demand conclusive proof of harm before intervention are therefore structurally incompatible with persistent chemical classes.

3. Comparative Global Regulatory Responses

3.1 The United States: Incrementalism and Ex Post Governance

In the United States, PFAS regulation has evolved primarily through litigation, administrative action, and state-level initiatives. Early federal responses relied on voluntary industry phase-outs of specific compounds such as PFOA and PFOS. While these measures reduced production of certain legacy PFAS, they lacked enforceability and failed to prevent widespread environmental contamination or the proliferation of replacement compounds.

Litigation has played a central role in compensating affected communities, but it operates as a remedial mechanism rather than a preventive one. Regulatory intervention typically occurs only after contamination has been detected, by which time environmental harm is often irreversible. The US approach thus remains largely reactive, focusing on liability and remediation rather than lifecycle prevention.

3.2 The European Union: Precaution and Class-Based Regulation

In contrast, the European Union has adopted a fundamentally different regulatory philosophy. Recognising that substance-by-substance regulation is ineffective for persistent chemicals, EU regulators have increasingly treated PFAS as a single chemical class defined by shared persistence and environmental behaviour. Persistence itself is treated as sufficient justification for regulatory restriction, even in the absence of complete toxicological characterisation.

This shift reflects a precautionary orientation. Long-term environmental integrity is prioritised, even where short-term economic convenience is affected. By intervening upstream, the EU seeks to prevent the irreversible contamination that has characterised PFAS governance elsewhere.

3.3 Lessons for Developing Jurisdictions

The divergence between US and EU approaches highlights a critical lesson for developing countries: regulatory delay results in contamination that cannot be undone. For countries with limited remediation capacity, reliance on post-contamination governance imposes disproportionate burdens. Precautionary, class-based regulation is therefore not a luxury of wealthy states, but a necessity for environmental justice.

4. India's Constitutional Framework and Regulatory Silence

4.1 Article 21 and the Right to a Chemically Safe Environment

Article 21 of the Constitution of India guarantees the right to life and personal liberty. Judicial interpretation has consistently expanded this provision to include the right to a clean and healthy environment. In *Subhash Kumar v State of Bihar*, the Supreme Court explicitly recognised the right to pollution-free water and air as integral to Article 21.

PFAS contamination directly implicates this right. Unlike conventional pollutants, PFAS may contaminate drinking water without altering its appearance, taste, or odour, exposing populations to long-term health risks without visible warning. The constitutional injury lies not merely in demonstrable harm, but in systemic exposure to irreversible chemical risk.

4.2 Precautionary Principle and Scientific Uncertainty

The precautionary principle was formally incorporated into Indian law in *Vellore Citizens' Welfare Forum v Union of India*. The Court held that lack of scientific certainty cannot justify postponing measures to prevent environmental degradation. PFAS contamination exemplifies the risk category envisaged by this doctrine: scientifically complex, delayed in manifestation, and potentially irreversible.

Despite this jurisprudence, Indian regulators continue to treat scientific uncertainty as a reason for inaction rather than intervention. This inversion of precaution reflects administrative practice, not constitutional command.

4.3 Public Trust Doctrine and Intergenerational Harm

In *M.C. Mehta v Kamal Nath*, the Supreme Court articulated the public trust doctrine, holding that natural

resources such as water are held by the State in trust for public use and future generations. Allowing persistent chemicals to contaminate groundwater constitutes a breach of this trust, particularly where regulatory silence enables irreversible degradation.

PFAS contamination externalises long-term costs onto future generations, who derive no benefit from present chemical use. This intergenerational dimension places PFAS squarely within the constitutional logic of environmental trusteeship.

4.4 Polluter-Pays Principle and Its Limits

The polluter-pays principle, affirmed in *Indian Council for Enviro-Legal Action v Union of India*, requires polluters to bear the cost of remediation. However, PFAS expose the limitations of ex post liability. Remediation is technically complex, prohibitively expensive, and often ineffective once contamination has spread. Liability mechanisms, while necessary, are insufficient without upstream preventive regulation.

5. PFAS as a Structural Governance Failure

India's failure to regulate PFAS reflects deeper structural weaknesses in environmental governance. Regulatory frameworks remain media-specific, reactive, and focused on visible pollution. Chemical governance lacks lifecycle oversight, disclosure requirements, and inter-agency coordination.

The Supreme Court has repeatedly cautioned against allowing technical complexity to justify regulatory paralysis. In *A.P. Pollution Control Board v Prof. M.V. Nayudu*, the Court emphasised the need for scientifically informed decision- making. PFAS governance in India reflects precisely the inertia warned against: science exists, constitutional authority is clear, yet regulatory action remains absent.

This disconnect transforms constitutional principles into symbolic commitments rather than operational safeguards.

6. Environmental Justice and the Global South

PFAS exposure is not evenly distributed across society. In practice, the greatest risks are borne by communities dependent on groundwater, informal food systems, or those living close to industrial activity. This raises concerns under Article 14 (equality) and Article 39(b), which mandates equitable distribution of material resources.

For the Global South, PFAS governance also raises transboundary concerns. In the absence of domestic controls, developing countries risk becoming sinks for PFAS-containing products and waste displaced from more tightly regulated jurisdictions. India's regulatory choices therefore have regional and global implications.

7. Conclusion: From Pollution Control to Chemical Governance

PFAS regulation represents a defining test for contemporary environmental governance. It challenges legal systems to respond to scientific complexity, irreversible risk, and intergenerational harm. In India, the failure to regulate PFAS is not inevitable; it is a product of institutional design choices that prioritise short-term economic convenience over long-term constitutional commitments.

The analysis in this article leads to a clear conclusion: PFAS cannot be treated merely as a technical environmental issue. They raise questions of constitutional governance. India's Constitution and Supreme Court jurisprudence provide ample authority for precautionary, lifecycle-based chemical regulation. The task ahead is not to invent new principles, but to operationalise existing ones.

By doing so, India can not only address PFAS contamination but also offer a model for chemical governance in the Global South—one that aligns scientific understanding, constitutional commitments, and concerns of environmental justice.

Author Declaration: Portions of this manuscript were linguistically edited with the assistance of an AI-based language tool. All arguments, interpretations, legal analysis, and conclusions are the author's own.

About the Author: *Er. Unmesh Shukla is currently working as an Executive Engineer with UP Water Corporation and looking after water supply to National Capital Delhi from Upper Ganga Canal. He holds B. Tech in Civil Engineering from HBTI Kanpur (Now HBTU) and M. Tech in Environmental Engineering from BITS Pilani. He has attended and passed one month special course on PFAS in Delft University of Technology, Delft, Netherland and is currently pursuing PG Diploma in Environmental Law and Policy from National Law University, Delhi*

An article published in the News Paper about the Research work of

Maj Gen. Dr Shripal, VSM (Retd)

मशीनी पेड़ से प्रदूषण नियंत्रण की नई स्वदेशी पहल

वायु प्रदूषण आज देश-दुनिया के सामने एक गंभीर चुनौती बन चुका है। प्रदूषण को कम करने के लिए सरकारें और संस्थाएँ निरंतर प्रयासरत हैं, लेकिन अब तक स्थायी और व्यापक समाधान सामने नहीं आ पाया है। विशेषज्ञों के अनुसार वर्तमान परिस्थितियों में प्रदूषण को संतुलित करने के लिए प्रति व्यक्ति 131 से अधिक पेड़ लगाने की आवश्यकता बताई जाती है, जो स्थान और समय की सीमाओं के कारण व्यावहारिक रूप से कठिन है।

इसी चुनौती के समाधान की दिशा में भारत में स्वदेशी तकनीक से विकसित मशीनी पेड़ के रूप में बंकरमैन टेक्नोलॉजी अब बाजार में उपलब्ध है। इस प्रकार की तकनीक विश्व स्तर पर नई नहीं है जिन स्थानों पर प्राकृतिक पेड़ लगाना संभव नहीं होता, जैसे स्पेस मिशन, पनडुब्बियाँ एवं परमाणु पनडुब्बियाँ वहाँ ऐसी तकनीकों का उपयोग पहले से किया जाता रहा है। हालांकि अत्यधिक लागत के कारण यह तकनीक अब तक सीमित दायरे में ही थी।





स्वदेशी विकास के कारण बंकरमैन टेक्नोलॉजी अब अधिक किफायती बन गई है और इसे घरों के भीतर तथा बाहरी वातावरण दोनों में प्रभावी रूप से स्थापित किया जा सकता है।

वायुमंडलीय विशेषज्ञ एवं बंकरमैन के मेजर जनरल डॉ. श्रीपाल के अनुसार, यह तकनीक मशीनी पेड़ की तरह कार्य करती है। यह प्राकृतिक पेड़ का विकल्प नहीं, बल्कि एक प्रभावी पूरक समाधान है। जहाँ एक प्राकृतिक पेड़ को पूर्ण विकसित होने में कम से कम पाँच वर्ष लगते हैं, वहीं बढ़ते शहरी प्रदूषण के बीच तत्काल समाधान की आवश्यकता है।

यह मशीनी पेड़ CO_2 सहित विभिन्न प्रदूषणकारी गैसों को अवशोषित कर उन्हें संसाधित करता है तथा खनिज युक्त जैविक खाद (Minerals Rich Organic Manure) में परिवर्तित करता है, जिससे वातावरण को स्वच्छ बनाने में सहायता मिलती है।

जहाँ एक प्राकृतिक पेड़ के लिए जितनी जगह चाहिए, उतनी ही जगह में 50 या उससे अधिक मशीनी पेड़ स्थापित किए जा सकते हैं। प्राकृतिक पेड़ को कमरे के अंदर नहीं लगाया जा सकता, लेकिन यह तकनीक इनडोर उपयोग के लिए भी उपयुक्त है। कमरे के अंदर स्थापित करने पर यह 40 प्रतिशत से अधिक बिजली की बचत में भी सहायक हो सकती है। बंकरमैन टेक्नोलॉजी को ~~अल्लड~~, भारत सरकार के विज्ञान एवं प्रौद्योगिकी विभाग (DST), IIT सहित कई सरकारी एवं शैक्षणिक संस्थानों से मान्यता प्राप्त होने का दावा किया गया है।

INSTITUTION OF WATER AND ENVIRONMENT (INDIA)

Reg. No:.S-E/ 150/Distt. South-East/2013

E-mail: iwe.india@gmail.com Web site: www.iweindia.co.in

Regd Off. : B-149, F.F C.R. Park, New Delhi – 110019

Executive Off. : 6/148, Palm Olympia, Sector16C,

Greater Noida West, 201009

1. Information by Er. Ram Mohan Kant, D G (P)
2. Compiled by Er. P. K. Chauhan, D G (F)