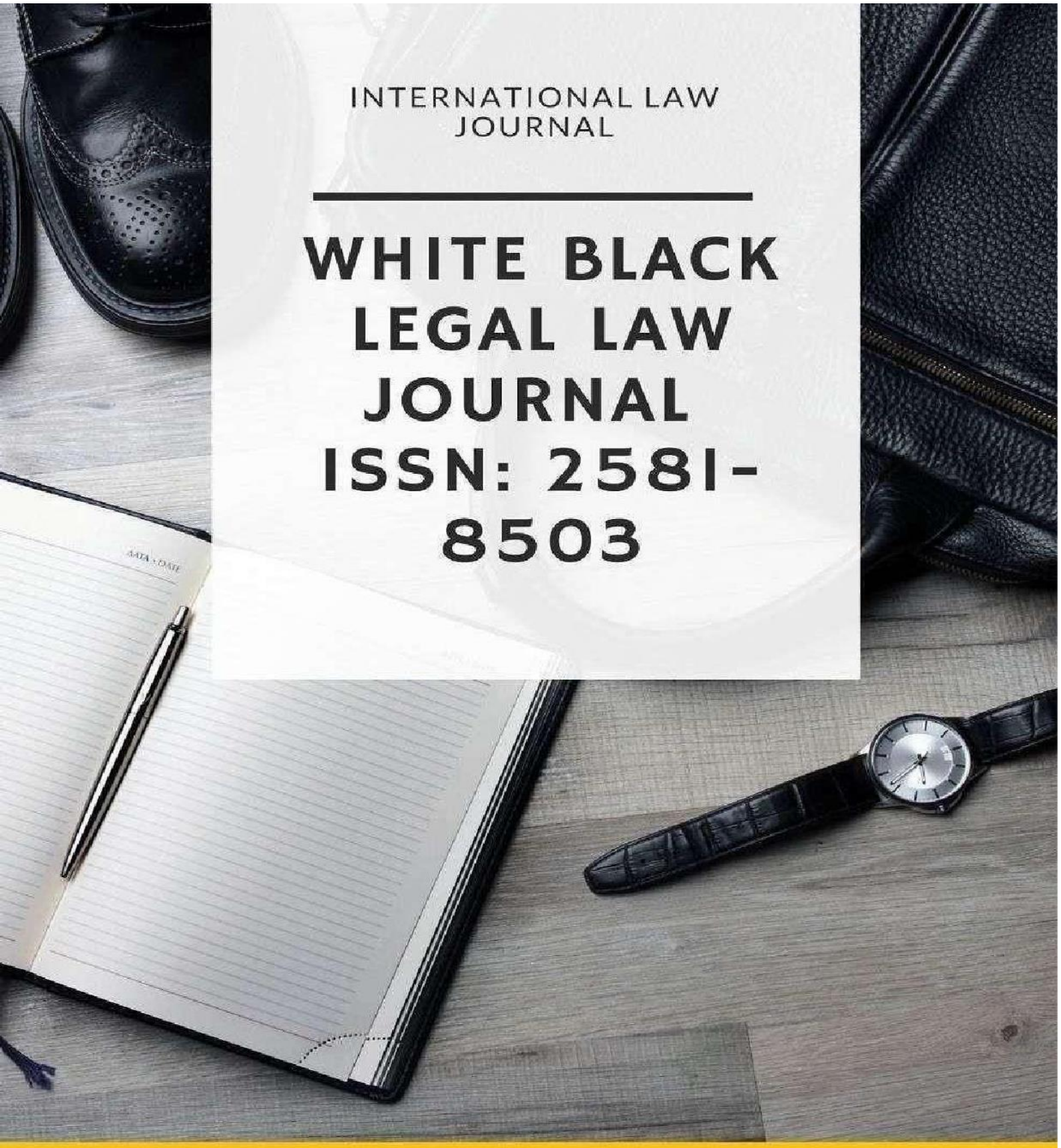

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AGROCHEMICAL REGULATION IN INDIA AND THE PRECAUTIONARY PRINCIPLE: A MISSED CONSTITUTIONAL MANDATE?

AUTHORED BY - UTKARSH DAS

I. Introduction: The Constitutional Imperative and its Regulatory Disconnect

The advent of the Green Revolution in the mid-twentieth century transformed India's agricultural landscape, turning it from a food-deficient nation into a major global producer and exporter of agricultural commodities.[1] This monumental achievement was underpinned by a significant increase in the use of agrochemicals, a category encompassing pesticides, insecticides, fungicides, and herbicides.[1] aThese substances, while instrumental in enhancing crop yields and ensuring food security for a burgeoning population, have simultaneously unleashed a cascade of devastating environmental and public health crises.[3] The unregulated and indiscriminate use of these chemicals has led to widespread soil and water pollution, a decline in biodiversity, and a range of severe health problems for farmers and consumers, including a high incidence of pesticide-related poisonings and deaths.[2] The central legal and ethical question that arises is how to reconcile the economic necessity of using these chemicals with the state's paramount duty to protect its citizens and the environment.

At the heart of this jurisprudential challenge lies the precautionary principle, a cornerstone of modern environmental law.[8] This principle dictates that where there are threats of serious or irreversible damage, a lack of full scientific certainty should not be a pretext for postponing cost-effective measures to prevent environmental degradation.[9] This stands in stark contrast to the traditional preventive principle, which requires irrefutable evidence of harm before regulatory action can be taken.[9] The precautionary approach is particularly salient in the context of agrochemicals, where the long-term, synergistic, and latent health effects may not be fully understood for decades.[8] As a tool of environmental governance, it provides a crucial framework for decision-makers to act promptly and decisively to avert risks to human health and the environment.[8]

This paper posits that despite the Indian judiciary's unequivocal and consistent recognition of the precautionary principle as a binding legal norm and an intrinsic part of the constitutional fabric, India's legislative and regulatory frameworks for agrochemicals have systematically

failed to operationalize this mandate. This disconnect has created a profound implementation chasm, leading to continued environmental and public health crises that are both a human tragedy and an economic liability. This analysis will first trace the jurisprudential genesis of the precautionary principle within India's constitutional and judicial schema. It will then critically examine the inadequacy of the existing regulatory apparatus in translating these constitutional ideals into practice. Finally, it will offer a comparative perspective with the European Union's robust, hazard-based model and propose concrete reforms to bridge this critical divide.

II. The Jurisprudential Foundation: Constitutional Mandates and the Right to Life

The constitutional basis for environmental protection in India is both broad and deeply rooted, forged through a synergistic reading of fundamental rights, directive principles of state policy, and fundamental duties. While the original text of the Constitution did not explicitly articulate a right to a clean environment, the Indian judiciary, through an act of deliberate and creative interpretation, has woven this right into the very core of the nation's supreme legal document.[10]

The genesis of this legal evolution lies in Article 21, the fundamental right that guarantees that "no person shall be deprived of his life or personal liberty except according to procedure established by law".[11] In a series of landmark judgments, the Supreme Court of India has expansively interpreted "life" not as a mere biological existence but as a right to live with human dignity.[11] This expansive interpretation first recognized a right to a pollution-free environment in cases like

Rural Litigation and Entitlement Kendra v. State of U.P. and was further solidified in *Subhash Kumar v. State of Bihar*.[11] The Court in the latter case held that the right to life includes the right to clean water and air, affirming that a citizen can challenge any threat to the quality of life under Article 32 of the Constitution.[14] This judicial pronouncement transformed environmental protection from a discretionary policy matter into a justiciable fundamental right.

This fundamental right is buttressed by a pair of constitutional duties introduced by the 42nd Amendment in 1976.[10] Article 48A, a Directive Principle of State Policy, mandates that "the State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country".[10] While Directive Principles are not strictly enforceable in a court of law, the judiciary has consistently read them as a foundational guide for state action and a moral compass for the government.[16] This is complemented by Article 51A(g), a Fundamental Duty, which obliges "every citizen of India to protect and improve the natural environment

including forests, lakes, rivers and wild life and to have compassion for living creatures".[10] When read together with Article 21, these provisions create a powerful legal and ethical synergy. The judiciary, as the ultimate arbiter of the Constitution, has utilized this framework to impose a binding obligation on the state to proactively prevent environmental harm, thus establishing the groundwork for the adoption of the precautionary principle.[10]

III. The Supreme Court as a Proactive Architect of Environmental Law

The Indian judiciary has not merely interpreted existing law; it has, in a display of remarkable judicial activism, taken on a quasi-legislative role to fill a significant vacuum left by legislative and executive inaction.[13] In doing so, it has transformed abstract international principles into a binding part of Indian environmental jurisprudence.

The formal introduction of the precautionary principle into Indian law is most famously attributed to the landmark judgment in *Vellore Citizens Welfare Forum v. Union of India*.[17] Faced with a writ petition concerning severe pollution caused by tanneries in the state of Tamil Nadu, the Supreme Court held that the precautionary principle and the polluter pays principle are essential features of "sustainable development" and are now part of customary international law.[17] The Court explicitly stated that these principles are enforceable in India even without specific statutory backing.[17] This verdict marked a watershed moment, formally recognizing that environmental measures must anticipate, prevent, and attack the causes of environmental degradation, a direct and unequivocal embrace of the precautionary approach.[18]

This principle was further refined and strengthened in *A.P. Pollution Control Board v. M.V. Nayudu*.[19] In this case, the Supreme Court addressed the issue of scientific uncertainty head-on, holding that the precautionary principle justifies taking preventive action even when cause-and-effect relationships are not fully established scientifically.[20] A key innovation of this judgment was the reversal of the burden of proof, placing the onus on a developer or polluter to prove the environmental benignity of their projects rather than on the regulator to prove harm.[20] This principle has profound implications for agrochemical regulation, as it compels manufacturers to demonstrate a substance's safety before it can be registered and introduced into the market, a practice that is commonplace in precautionary jurisdictions.

The expansion of environmental jurisprudence did not stop there. The Court's activism is also evident in the series of cases filed by the noted environmental lawyer, M.C. Mehta. The *M.C. Mehta v. Union of India* (Oleum Gas Leak) case of 1986, which followed closely on the heels of the Bhopal gas tragedy, established the principle of absolute liability.[21] The Court

ruled that an enterprise engaged in a hazardous or inherently dangerous activity has an absolute and non-delegable duty to ensure that no harm is caused to anyone due to the activity, regardless of any negligence on its part.[21] This doctrine, which later influenced the "polluter pays" principle, underscored the judiciary's commitment to holding polluters accountable and expanding the scope of environmental protection far beyond the confines of existing legislation.[21]

The judiciary's role as a proactive architect of environmental law is a direct consequence of a noticeable legislative and executive inertia. The development of environmental jurisprudence in India, as many commentators have observed, is almost entirely due to the courts stepping in when the legislature and executive failed to discharge their constitutional duties.[13] The Court, exercising its writ jurisdiction, has created new principles to deal with the unique problems of a modern, industrialized economy, filling the gaps in "dormant laws" and making them "effective, workable and enforceable".[16] While this judicial proactiveness has been a boon for environmental protection, it presents a delicate balance within the framework of a constitutional democracy. The practice of unelected judges creating

policy-laden doctrines raises valid questions about the separation of powers and democratic legitimacy.[17] However, as the evidence shows, this judicial intervention is often the sole recourse available to citizens through Public Interest Litigation (PIL) in the face of governmental inaction. The dismissal of a petition in *Subhash Kumar v. State of Bihar* on the grounds of personal interest, rather than public interest, shows that the courts are also cognizant of the potential for abuse, ensuring that genuine petitions receive due attention.[14] The robust framework built by the judiciary stands as a powerful testament to its commitment, but it remains a legal ideal in search of a corresponding legislative and regulatory response.

Case Name (Year)	Key Principle Established	Significance
M.C. Mehta v. Union of India (Oleum Gas Leak) (1987)	The Doctrine of Absolute Liability	Established that an enterprise engaged in hazardous activities has a non-delegable duty to ensure no harm is caused, regardless of negligence, laying the foundation for holding polluters accountable.

Subhash Kumar v. State of Bihar (1991)	The Right to a Clean Environment under Article 21	Affirmed that the right to clean water and air is an intrinsic part of the fundamental right to life, making environmental protection a justiciable right for citizens.
Vellore Citizens Welfare Forum v. Union of India (1996)	Precautionary Principle and Polluter Pays Principle	Formally incorporated the precautionary principle and the polluter pays principle as binding legal norms in Indian environmental law, even in the absence of explicit legislation.
A.P. Pollution Control Board v. Prof. M.V. Nayudu (1999)	Reversal of the Burden of Proof	Refined the precautionary principle by shifting the burden of proof to the polluter or developer to demonstrate the environmental benignity of a project in the face of scientific uncertainty.

Table II: Chronology of Key Judicial Interventions in Indian Environmental Law

IV. Regulatory Frameworks: An Inadequate Response to the Constitutional Mandate

In stark contrast to the judiciary's proactive stance, India's legislative and regulatory frameworks for agrochemicals have remained largely anachronistic and ill-equipped to address the complex environmental and health challenges of the modern era. The primary legislation governing these substances is the Insecticides Act of 1968, a law that predates the constitutional amendments on environmental protection and the majority of landmark judicial pronouncements.[23] The Act's stated purpose is to regulate the "import, manufacture, sale, transport, distribution and use of insecticides with a view to prevent risk to human beings or animals".[23] Its focus is predominantly on licensing and trade, ensuring the quality and efficacy of products, rather than on a comprehensive evaluation of their long-term environmental and health impacts.[24] The Act is criticized as a "decrepit" single piece of legislation that lacks adequate provisions to prevent farmer deaths, minimize risk, and protect against environmental and food contamination.[25]

Recognizing the need for an updated framework, the government introduced the Pesticide Management Bill in 2020, with the stated objective of replacing the outdated 1968 Act and minimizing the risk to humans, animals, and the environment.[27] However, a close analysis of the bill reveals that it is a missed opportunity for a paradigm shift. The bill has been criticized for maintaining a reactive "risk-based approach" rather than adopting a proactive,

precautionary, and hazard-based one.[27] This means it focuses on managing the perceived risks associated with a pesticide, assuming that harm can be mitigated, rather than on the inherent hazards of the substance itself.[30] The bill is also perceived as being industry-friendly, with vague safeguards, inadequate penalties that are not a sufficient deterrent for large corporations, and a lack of clear accountability for the use of highly hazardous chemicals.[27] A notable shortcoming is the bill's failure to explicitly incorporate the precautionary and polluter pays principles, which the judiciary has already established as the law of the land.[27]

While the Environment (Protection) Act of 1986 (EPA) is widely considered India's most comprehensive "umbrella legislation" with extensive powers to regulate hazardous substances and set environmental quality standards, its potential to address the agrochemical problem remains largely underutilized.[31] Enacted in the aftermath of the Bhopal gas tragedy, the EPA provides the Central Government with the authority to restrict or prohibit industrial activities in certain areas, issue directions to halt operations, and establish standards for environmental quality and pollution.[31] Theoretically, this powerful legislation could serve as a formidable tool to regulate the agrochemical industry, but in practice, the regulatory burden continues to fall on the outdated and flawed Insecticides Act.[26] This legislative and regulatory inertia stands as a stark contradiction to the constitutional and judicial ideals that have been so carefully constructed over the past decades.

V. The Implementation Chasm: Systemic Flaws and Practical Failures

The disconnect between the legal principles and regulatory practice in India is not merely an academic point of debate; it is a tangible reality with severe consequences for public health and the environment. The systemic failures in implementation manifest in several critical areas, from corrupt monitoring practices to the continued, illegal use of highly toxic chemicals. The regulatory and enforcement mechanisms in India are demonstrably weak. Reports from organizations like the Centre for Science and Environment (CSE) have brought to light

"corruption and irregularities" within the pesticide registration system.[26] A key finding was that companies seeking to register new molecules often choose government-approved private commercial labs over government labs to generate data, as the former allows them to produce "desired results".[26] This institutional weakness at the very first stage of a pesticide's lifecycle—its entry into the market—ensures that potentially harmful chemicals are allowed into the country's food and agricultural systems, fundamentally undermining any subsequent attempts at control.[26] Furthermore, a lack of adequate infrastructure for testing and monitoring

pesticide residues in food and water means that many violations go undetected, especially in rural areas.[5]

A damning indictment of the implementation failure is the continued, widespread use of pesticides that have been officially banned by the government or the Supreme Court of India.[27] The case of Endosulfan is a classic example of this regulatory rot.[26] Despite a Supreme Court order banning its production, sale, and use in 2011 due to its severe health impacts and link to congenital deformities, it is still used in large quantities by farmers in various states.[26] Similarly, the highly toxic herbicide Paraquat, banned in over 60 countries including Switzerland where its manufacturer is headquartered, continues to be widely used in India, even in crops where its use is prohibited.[7] State-level attempts to ban this chemical have been largely ineffective, as the central government holds exclusive authority over pesticide regulation, a clear example of the legal and administrative hurdles that prevent a precautionary approach.[7] The use of Glyphosate, categorized by the WHO as a carcinogen, is also rampant and illegal in several Indian states, with a study by Pesticide Action Network (PAN) India finding at least 20 non-approved uses in food crops.[35]

These implementation failures have a profound human and ecological cost. The weak regulatory oversight and widespread illegal use of hazardous pesticides result in a high incidence of farmer poisoning and deaths.[7] Compounding this is the lack of proper training and a failure to mandate the use of personal protective equipment (PPE) for farmers, with one study finding that more than 90% of small-scale farmers had poor knowledge regarding the safe use of these chemicals.[6] The consequences also extend to the food chain. The high levels of pesticide residues found in various food products, including apples, grapes, and wheat, often exceed international safety standards, posing significant health risks to consumers and leading to economic losses from rejected agricultural exports.[30] The gap between constitutional ideals and regulatory reality is, therefore, not just a theoretical concern; it is a concrete public health and environmental catastrophe.

Pesticide Name	Status in Other Countries/International Conventions	Status in India	Known Health/Environmental Risks

Endosulfan	Banned by the Stockholm Convention as a Persistent Organic Pollutant.[26]	Banned for production, sale, and use by a Supreme Court order in 2011, but its illegal use continues unabated.[26]	Linked to congenital deformities, physical ailments, and neurotoxicity.[35] A classic case of environmental and health rot in the regulatory system.[26]
Paraquat	Banned in over 60 countries, including in the EU and China.[7]	Banned for manufacture, import, and use; however, its illegal use is rampant. State-level bans have been ineffective due to central government authority.[7]	Highly toxic, often fatal if ingested, and linked to Parkinson's disease, hepato-renal failure, and progressive lung fibrosis.[7] Linked to impulsive suicides and significant public health concerns.[7]
Glyphosate	Classified as a "probable human carcinogen" by WHO.[35]	Officially registered for use only in tea plantations and non-plantation areas; however, a recent study found 20 illegal uses in food crops in seven Indian states.[35]	Classified as a carcinogen.[35] Its illegal use is a severe regulatory violation with potential health consequences for farmers and consumers.[38]
Malathion	MRL in EU/UK is 200 times lower than in India.[30]	Approved for use, but with significantly higher Maximum Residue Limits (MRLs) compared to European standards.[39]	A known carcinogen, cholinesterase inhibitor, and suspected endocrine disruptor.[30] Its high residues in Indian food exports lead to rejections in international markets.[39]

Pesticide Name	Status in Other Countries/International Conventions	Status in India	Known Health/Environmental Risks
Carbaryl	MRL in EU/UK is significantly lower than in India.[30]	Approved for use, but with significantly higher MRLs, with the Indian MRL for okra being a thousand times its UK equivalent.[30]	A known carcinogen, cholinesterase inhibitor, and suspected endocrine disruptor that can negatively affect sexual function and fertility.[30]

Table III: Select List of Banned/Restricted Pesticides and their Status in India

VI. Comparative Perspective: A Lesson from the European Union's Precautionary Model

To understand the full scope of India's regulatory shortcomings, a comparative analysis with a jurisdiction that has successfully operationalized the precautionary principle is essential. The European Union (EU) provides a compelling case study, as its approach to agrochemical regulation is philosophically and practically antithetical to India's.

The EU's regulatory framework, codified in Regulation (EC) No 1107/2009, is rooted in the explicit and mandatory application of the precautionary principle.[41] This legislation adopts a "hazard-based approach" rather than a risk-based one.[30] This means that before an active substance can be approved for use, it must be proven to have no immediate or delayed harmful effects on human or animal health, and no unacceptable effects on the environment.[41] The burden of proof is unequivocally placed on the applicant to demonstrate the substance's safety, and the European Commission and member states must take preventive measures when the first evidence of potential harm appears, regardless of scientific certainty.[42] A rigorous, peer-reviewed evaluation by the European Food Safety Authority (EFSA) is a mandatory step in the approval process, and approvals are periodically reviewed and can be swiftly revoked if new data suggests a threat.[41]

This regulatory philosophy stands in stark contrast to India's system, which operates on the assumption that a substance is benign until proven harmful, a process that can be delayed for years by administrative and legal hurdles, industry pressure, and a lack of political will. The practical ramifications of this disparity are significant. Indian apples and grapes, for example, are allowed to contain 200 times the amount of the insecticide malathion as their UK

counterparts, while the MRL for carbaryl in Indian wheat is four times that of the UK.[30] The EU's strict standards are not merely a domestic matter of health and safety; they also serve as a powerful external force. Indian food exports have been repeatedly rejected by countries with stricter standards due to illegally high pesticide residues, demonstrating how India's weaker regulatory framework can become a significant economic liability and a barrier to international trade.[39]

The Indian government has a history of resisting these stricter global standards, often framing them as "non-tariff trade barriers" intended to protect domestic markets.[30] However, this argument fails to recognize a deeper, more fundamental dynamic. By continuing to maintain a weak, risk-based regulatory system and allowing the use of pesticides banned elsewhere, India undermines its own reputation for food safety and makes its agricultural products less competitive on the global stage. The very economic interest that a lax regulatory regime is intended to protect is ultimately compromised by the consequences of that weakness. The EU's model demonstrates that a robust, precautionary approach is not just a matter of public health and environmental protection but also a strategic necessity for long-term economic competitiveness and reputational integrity.

Feature	India	European Union
Regulatory Philosophy	Primarily risk-based approach, assuming harm can be managed and mitigated.	Hazard-based approach, with a mandatory application of the precautionary principle.
Burden of Proof	Historically on the regulator to prove harm; judicially reversed in some cases, but not legislatively codified for agrochemicals.	Unambiguously on the applicant to prove the safety and benignity of a substance.
Key Legislation	Insecticides Act, 1968; Pesticide Management Bill, 2020 (proposed).	Regulation (EC) No 1107/2009.
Scientific Assessment	Criticized for corruption and industry influence in private labs; no formal mechanism for post-approval review based on new data.	Strict, peer-reviewed process by the European Food Safety Authority (EFSA) and national authorities; new data can trigger swift action.

Pesticide Approvals	Many Highly Hazardous Pesticides (HHPs) banned in EU are still in use; approval is reactive.	Swift bans on active substances that do not meet approval criteria; approval is preventive.
Maximum Residue Limits (MRLs)	MRLs for several key pesticides are significantly higher than EU standards.	Meticulously set MRLs with a focus on protecting vulnerable groups and the environment.

Table I: Comparative Analysis of India and EU Pesticide Regulation

VII. Suggestions for Reform: Towards a Precautionary Future

The chasm between India's constitutional ideals and its regulatory reality for agrochemicals is profound. Bridging this gap requires a comprehensive, multi-pronged strategy that addresses legislative, institutional, and policy-level shortcomings. The path forward demands a fundamental paradigm shift from a reactive, risk-based approach to a proactive, precautionary one.

1. **Legislative and Regulatory Amendments:** The most critical first step is to amend the proposed Pesticide Management Bill, 2020, to explicitly and unequivocally integrate the precautionary principle as its foundational regulatory norm. This would formalize the judicial mandate into legislative practice and compel regulators to act on the first evidence of potential harm. The bill should also include provisions for mandatory, comprehensive environmental and health impact assessments as a pre-condition for the registration of any new agrochemical, shifting the burden of proof to the industry. Furthermore, a legal mechanism must be established for an expedited ban on any pesticide that has been prohibited in a significant number of major global jurisdictions, with a clear provision for an immediate temporary ban in cases of imminent risk.
2. **Institutional Strengthening:** The systemic corruption and a lack of accountability in the regulatory process must be addressed head-on. The Central Insecticides Board and its associated committees must be granted greater independence, with strict and enforceable conflict-of-interest policies for all experts and members involved in the approval process. Funding for government labs and independent research should be significantly increased to reduce reliance on industry-funded private labs for data generation. To combat the rampant illegal use of banned pesticides, a robust digital tracking system, from import/manufacture to retail sale, should be implemented.

3. **Enhancing Farmer and Consumer Protection:** The current lack of farmer awareness and training is a major driver of misuse and subsequent health hazards. The government should mandate and fund comprehensive, ongoing training programs for farmers on safe handling, correct application dosages, and the use of proper personal protective equipment (PPE). These programs should also actively promote Integrated Pest Management (IPM) and biopesticides as sustainable, eco-friendly alternatives. On the consumer front, mandatory, real-time public disclosure of pesticide residue monitoring data would increase transparency and empower citizens to hold the government and industry accountable.
4. **Policy and International Alignment:** India must abandon its defensive posture in international forums and instead align its domestic laws and Maximum Residue Limits (MRLs) with global best practices and international conventions like the Rotterdam Convention. This is not only a matter of public health but also an economic necessity to ensure that Indian agricultural exports can meet the stringent food safety standards of key international markets. Furthermore, government subsidies should be restructured to incentivize the use of low-risk, eco-friendly biopesticides and organic farming methods over conventional chemical pesticides.

VIII. Conclusion: Translating Ideals into Practice

India's constitutional and judicial foundations for environmental protection are as robust as any in the world, with the precautionary principle firmly established as a binding legal and constitutional norm. A close examination of landmark judgments reveals a proactive and innovative judiciary that has consistently expanded the right to life to include the right to a clean and healthy environment, filling a vacuum created by legislative inaction. However, this jurisprudential strength has been met with a disappointing and inadequate legislative and regulatory response. The outdated Insecticides Act and the proposed Pesticide Management Bill, 2020, epitomize a regulatory system that remains stubbornly reactive and industry-friendly, a fundamental misalignment with the constitutional mandate.

The gap between the judicial ideal and regulatory reality is not merely an academic concern; it is a matter of life and death, public health, and environmental integrity. It is an urgent national priority to translate the constitutional promise into effective regulatory practice.

The path forward demands a fundamental paradigm shift from a risk-based to a precautionary model, a commitment to strict enforcement, and the political will to place the health of its citizens and the integrity of its environment above short-term economic gains. Only then can

India truly fulfill its constitutional duty and emerge as a responsible global leader in sustainable and safe agricultural practices.

Footnotes

Please note that the following footnotes are formatted in accordance with the Bluebook, 20th Edition.

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