

Research on Determination of "Significant Risk" in Preventive Environmental Civil Public Interest Litigation: Current Situation, Problems and Improvement Measures

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Abstract: This paper discusses the issue of "significant risk" in preventive environmental civil public interest litigation, analyzes the current theoretical and practical situation in this field at home and abroad by taking China and the United States as examples, and further points out the legal problems faced by China in the determination of "significant risk", such as ambiguous norms, lack of uniform determination standards and balance of interests. It further points out that China is faced with legal problems such as ambiguous norms, lack of uniform identification standards and balance of interests. In order to cope with these challenges, this paper proposes a series of improvement measures, including clarifying the legal concept of "significant risk", constructing diversified rules of evidence and standards of proof, strengthening the construction of the mechanism of balancing interests, and strengthening the legislative and policy support. Among them, the construction of scientific and reasonable standards and procedures for the determination of "significant risk" is of vital significance. These measures provide a theoretical and practical basis for the improvement of the preventive environmental civil public interest litigation system, promote the construction of the rule of law for the environment, and promote sustainable economic and social development and the construction of ecological civilization.

Keywords: Preventive Environmental Civil Public Interest Litigation, Significant Risk, Judicial Determination, Environmental Interests

1. Introduction

With the accelerated development of industrialization and urbanization, environmental problems have become increasingly complex and highly uncertain, and the traditional post-facto mode of relief has made it difficult to effectively respond to potential environmental risks. Preventive environmental civil public interest litigation, as an emerging means of judicial relief, is centered on preventing environmental risks from turning into irreversible environmental damages through ex ante prevention, thus realizing the positive protection of environmental public interests. However, the accurate determination of "significant risk" is the key link to the effective launch and implementation of the lawsuit. At present, China is facing many difficulties in the determination of "significant risk", such as the lack and ambiguity of legal norms, the conflict between scientific uncertainty and legal certainty, and the difficulty of balancing interests, etc., which have seriously constrained the practical effect and theoretical development of the preventive environmental civil public interest litigation system.

The purpose of this paper is to discuss in depth the determination of "significant risk" in preventive environmental civil public welfare litigation, analyze the existing problems and their causes by systematically sorting out the relevant theories and practice, and then put forward scientific and reasonable solutions. Specific objectives include clarifying the connotation and extension of "significant risk", constructing operable identification standards and procedural rules, and improving relevant legislation and judicial practice to enhance the preventive function of preventive environmental civil public interest litigation. At the same time, this study hopes that through the comparative analysis of different jurisdictions, such as China and the United States, and drawing on international advanced experience, it will provide useful reference for the construction of the rule of law for China's environment, promote the progress of China's environmental justice, and contribute to the rule of law for the realization of the goals of sustainable economic and social development and ecological civilization construction.

2. Current situation and deficiencies in the determination of "significant risk" in preventive environmental civil public interest litigation at home and abroad

In the field of environmental law, the concept of "significant risk" and its place and role in preventive environmental civil public interest litigation have received widespread attention. By analyzing the status of "significant risk" in environmental law, we can find that it is of great significance in guiding environmental policies and legislation. Different countries and regions have different definitions and criteria for recognizing "significant risk", but generally agree that the precautionary principle is central to environmental governance[1]. In China, although the legal meaning and characteristics of "significant risk" have not yet been fully clarified, drawing on international experience can provide important reference and guidance for China's environmental law. The analysis of the current situation shows that there are deficiencies in the identification of "significant risk" in existing laws and regulations, both domestically and abroad, and that the relevant standards need to be further clarified and refined [2].

As the world's largest economies, China and the United States have taken different paths and approaches to environmental justice, displaying their own characteristics and advantages. The U.S. has accumulated rich theoretical and practical experience in environmental justice, focusing on public participation and the application of the principle of risk prevention, while China has made significant progress in environmental legislation and judicial practice in recent years, and continues to improve the relevant system. An in-depth comparative analysis of the research progress, practice and problems in the determination of "significant risk" in China and the United States will help China to further improve the relevant system, enhance the preventive function of environmental justice, and promote the construction of the environmental rule of law.

The theoretical basis for the determination of "significant risk" is one of the central issues in preventive environmental civil public interest litigation. American scholars generally agree that the precautionary principle is the theoretical basis, emphasizing that preventive measures should be taken to avoid potential environmental risks when scientific evidence is not fully sufficient [3]. Domestic scholars Han Kangning and Leng Luosheng also pointed out that "significant risk" should be understood as an act or state with a high degree of probability leading to serious environmental damage, which is distinctly different from the "actual damage" in the traditional environmental infringement[4]. Jiang Chunhong and Zhang Shuo further suggest that the determination of "significant risk" needs to comprehensively consider the nature, degree, likelihood, and severity of the consequences of the risk and other dimensions, and that only when the risk arising from a certain environmental behavior has the reality, urgency, and a high degree of permissibility, it can be recognized as a "significant risk". "Significant risk"[5].

With regard to the subject matter of the determination of "significant risk", in the United States, in judicial practice, courts usually refer to scientific assessment reports and expert opinions to determine "significant risk" [3]. For example, in some cases involving chemical pollution, the court will rely on the risk assessment data provided by the Environmental Protection Agency (EPA) and expert testimony to determine whether there is a significant risk. Domestic scholars Tian Qiyun and Cui Zhiyuan argue that the procuratorate, as a representative of public interest litigation, should play an important supporting role in the determination of "significant risk", and that it should be promoted to take an active part in the determination of the risk by clarifying its functional position[6]. Kang Jingwen, on the other hand, emphasizes the central position of the court in the determination of "significant risk", and that the court should make independent judgments based on the opinions of all parties and in accordance with the law and the specific circumstances of the case[7].

Regarding the criteria for the determination of "significant risk", American scholars have put forward a variety of risk assessment theories and methods, such as the German scholar Breuer's "three-point theory", which divides risk into risk, danger, and residual risk, which has also been used to a certain extent in the United States' risk assessment. This classification method has also been applied to some extent in the risk assessment in the United States. Domestic scholar Li Yang proposes that we should start from the aspects of "risk" and "significance", and clarify the specific elements of determination, such as the illegality of the behavior, the type of environmental risk, and the environmental elements that may be affected. Xu Yaoyao further proposes a typology of "major risks", which is divided into "major risks of environmental pollution" and "major risks of ecological damage"[8]. Xu Yaoyao (2023) further proposed a typology of "major risks", categorizing "major risks of environmental pollution" and "major risks of ecological damage", and put forward specific identification criteria and methods for different types of risks[9].

With regard to the procedure for determining "significant risk", in the United States, in judicial practice, the court will consider a number of factors to determine "significant risk", for example, in cases

involving nuclear energy programs, it will consider the possibility of nuclear leakage and the severity of the consequences, and will take precautionary measures even if the scientific evidence is not yet fully established. For example, in cases involving nuclear energy programs, the court will consider the possibility of nuclear leakage and the severity of the consequences, and will take precautionary measures even if the scientific evidence is not yet fully established [3]. Domestic scholar He Lunfeng (2023) proposed a more complete procedural system, including risk identification, risk grading, risk communication, and risk tracking, and emphasized that strict procedural rules need to be followed in each of these processes to ensure the scientific and reasonable nature of the determination results[10].

In the process of determining "significant risk", how to balance the interests of all parties is an important challenge. In the United States, in the process of determining "significant risk", the court will maintain judicial modesty, avoid excessive interference with administrative power, and at the same time give full consideration to the professional judgment and scientific assessment of the administrative organs, combined with the interests of the public. For example, in some cases involving conflicts between economic development and environmental protection, the court will weigh the interests of all parties and seek a balance. Domestic scholar Wang Bin pointed out that the determination of "significant risk" needs to take into account many factors such as economic development, social stability, etc., and if the determination is too strict or too loose, it will bring adverse effects. Therefore, a diversified interest balancing mechanism should be constructed, such as the establishment of a comprehensive assessment mechanism combining environmental impact assessment and economic impact assessment, and the introduction of a stakeholder participation mechanism, in order to realize the coordination and co-progress of environmental interests and economic development interests[11].

Although the United States has relatively mature theories and practical experience in environmental risk prevention, there are still ambiguities in the definition and application of the principle of risk prevention [12]. Domestic judicial practice, the determination of "significant risk" is faced with many difficulties, such as legislation on the concept of "significant risk" and the determination of the lack of clear and specific provisions of the standard, resulting in judicial practice is difficult to apply accurately, and the existing legal norms for the determination of the There is also a lack of procedural rules in the existing legal norms for the determination of "material risk" [13]. In addition, there is a natural conflict between the scientific uncertainty of "significant risk" and the certainty pursued by the law, and how to transform scientific uncertainty into legal certainty is a problem that needs to be solved urgently[7].

In response to the above problems, the United States has emphasized the importance of strengthening the role of scientific assessment and expert opinion, while focusing on the balance of interests and judicial modesty [3,14]. Domestic scholars Han Kangning and Leng Luosheng proposed that the relevant legislation should be further improved to clarify the conceptual connotation and identification criteria of "significant risk", and to establish and improve the identification procedural rules[4]. Jiang Chunhong and Zhang Shuo suggest establishing an interactive mechanism between science and law, strengthening interdisciplinary research on environmental science and jurisprudence, cultivating compound talents, and establishing a mechanism for environmental science experts to participate in judicial determination[5]. Li Yang, on the other hand, advocates the construction of a diversified interest balancing mechanism to realize the coordination between environmental interests and economic development interests[8].

To summarize, by comparing the theory and practice of China and the United States in the determination of "significant risk", it can be seen that there are similarities and differences between the two countries in terms of the concept of risk prevention, the main body of the determination, the criteria, the procedure and the balance of interests. This comparison helps us to better understand the complexity of the determination of "significant risk" and provides useful reference for the improvement of the relevant domestic system. However, we also need to note the influence of different cultures and systems in the two countries. For example, the United States of America's risk prevention principle in judicial practice, although the flexible use of environmental protection, but to a certain extent, also gives the judge a greater degree of discretion. When introducing and applying the principle in China, we should focus on improving the legislation and judicial interpretation, clarifying the scope and conditions of its application, and preventing the confusion of judicial practice due to the ambiguity of the standard. In the future, with the deepening of relevant theoretical research and the accumulation of practical experience, we have reason to believe that the determination of "significant risk" will gradually move towards scientific, standardized and rationalized, so as to provide a solid theoretical and practical basis for the improvement and development of the preventive environmental civil public interest litigation system, and to contribute to the construction of the environmental rule of law in China.

3. Criteria and Procedures for Determining "Significant Risk" in Preventive Environmental Civil Public Interest Litigation

Through the analysis of the current situation, it can be found that in the preventive environmental civil public interest litigation, establishing a scientific and reasonable standard and procedure for identifying "major risks" is of vital significance. Clear identification standards and standardized procedures can provide clear guidance for judicial practice, to ensure the effectiveness and fairness of the litigation, so as to better protect the ecological environment and safeguard the public interests of society.

In many previous judicial cases, the judge's determination of "significant risk" did not form a very tight logical closed loop, without a complete determination system. For example, in the case of five small-leaf maple [(2015) Gan Minchu Zi No. 45], the judge only relied on the five small-leaf maple's endangerment rating to determine the existence of "significant risk". Although the endangerment level of the species can indirectly reflect the severity of the damage consequences and become a consideration factor in the determination of "significant risk", it cannot be used alone as sufficient evidence to determine the existence of "significant risk". In the green peacock case [(2020) yunmin final 824], the judge demonstrated the "major risk" by applying the possibility of damage, the severity of the consequences, and the irreversibility of the reasoning. Compared with previous case demonstrations, it was more in-depth and made certain progress. However, in the future, the construction of a more scientific and uniform determination standard is still the direction of our efforts.

3.1 Recognition criteria

In preventive environmental civil public interest litigation, it is necessary to build a standard for the determination of "significant risk", first of all, from the multi-dimensional characteristics of the risk. The nature of the risk is one of the key considerations. Environmental pollution risks may involve a variety of pollutants compound pollution, such as chemical enterprise leakage accident, not only will release a large number of toxic chemicals, but also may trigger a chain reaction, on the soil, water and the atmosphere caused by a full range of pollution. Ecological damage risks, on the other hand, focus on the integrity of ecosystems and biodiversity. For instance, the construction of large hydropower projects may damage river ecosystems, affect the habitats of rare species, and even lead to the extinction of certain species.

The assessment of the level of risk is also indispensable. This requires a comprehensive analysis of the scope and severity of the damage that may be caused by the risk. In the case of a chemical company, for example, the impact of a spill may extend far beyond the company's immediate surroundings, spreading to a wider area and posing long-term hazards to the health of the population, agricultural production and the ecosystem. The likelihood of a risk occurring needs to be assessed in conjunction with historical data and expert opinion. The probability of an accident at a chemical company increases significantly if the equipment is old and poorly maintained.

The severity of consequences is another important dimension to consider. The possible consequences of the occurrence of a risk, in particular the long-term impact on the environment and public health, must be adequately assessed. For example, a spill from a chemical company may lead to long-term contamination of soil and water bodies, affect the ability of ecosystems to repair themselves, and even cause irreversible damage to human health.

A typology of risks can help to identify "significant risks" more accurately. The identification of significant risks in the category of environmental pollution can be based on the type of pollutant, the mode of discharge, and the specificity of the environmental medium. For example, wastewater discharges from chemical enterprises may contain a variety of toxic and hazardous substances, causing serious pollution to neighboring water bodies and affecting the survival of aquatic organisms and the safety of water quality. Major risks in the ecological damage category require attention to the integrity of ecosystems, the protection of biodiversity and the maintenance of ecological service functions. For example, deforestation may lead to the loss of wildlife habitat, disrupt the ecological balance, and affect the stability and service functions of the ecosystem.

3.2 Procedural construction

The initiation of a risk assessment is the first step in the construction of a procedure for determining "significant risk". When there are preliminary indications that an act may pose an environmental risk,

such as anomalies in environmental monitoring data or reports from the public, the regulator or the judiciary should initiate a risk assessment in a timely manner. The timeliness of this step is critical to preventing the risk from becoming amplified. In collecting relevant information, it is important to ensure the comprehensiveness and accuracy of the information, including production records of the enterprise, environmental monitoring reports, and expert opinions, which will provide a solid data base for risk assessment. At the same time, the legality and authenticity of evidence should be reviewed to ensure that it is legally valid.

Expert participation mechanisms play an irreplaceable role in identifying "significant risks". Experts in the fields of environmental science and engineering can provide professional advice to assist in determining the degree of risk and preventive measures. With their professional knowledge and practical experience, they are able to conduct in-depth analyses of complex environmental risks and provide a scientific basis for the judicial authorities. The organization of hearings, on the other hand, provides an opportunity for all parties to express their opinions and ensures the transparency and fairness of the process. Through the hearings, stakeholders such as enterprises, environmental organizations and local residents can fully express their views, making the risk assessment process more comprehensive and objective.

Risk communication is an integral part of the process, and adequate communication with all parties, especially interaction with the public's perception of risk, enhances the acceptance of the results of the risk assessment. This not only helps to raise public environmental awareness, but also promotes a common concern and response to environmental risks by all sectors of society. Finally, continuous monitoring and assessment of changes in risk ensures that the findings are scientific and current. In the course of litigation, if new risk factors are found, the risk assessment report should be updated in a timely manner and the corresponding preventive measures should be adjusted. For example, during the environmental risk assessment process of a chemical enterprise, the quality of its surrounding environment was regularly monitored so that new risk factors could be identified in a timely manner and corresponding measures taken.

Through the construction of scientific and reasonable criteria and procedures for determining "significant risk", it is possible to improve the operability and effectiveness of preventive environmental civil public interest litigation, and to give better play to its preventive function in environmental protection. This will not only help to protect the ecological environment and safeguard the public interests of society, but also promote sustainable economic and social development.

4. Other measures to improve the identification of "significant risks"

4.1 Clarifying the legal concept and meaning of "significant risk"

In preventive environmental civil public interest litigation, the first issue is to clarify the legal concept and connotation of "significant risk". At present, China's existing laws and regulations on the definition of "significant risk" is vague, resulting in judicial practice, judges are difficult to accurately judge, affecting the fairness and authority of the judiciary. In order to solve this problem, should be through the way of legislation, "significant risk" for a clear definition. Specifically, it should be emphasized that "significant risk" refers to an act or state that is highly probabilistic and leads to serious environmental damage, which is clearly different from the "actual damage" in traditional environmental infringement. This kind of behavior or state not only includes the environmental damage that has occurred, but also includes the potential risk that may cause significant threat to the environmental public interest. At the same time, advanced foreign experiences should be drawn on, such as Germany's "three-point theory", which classifies risks into danger, risk and residual risk, in order to help the judicial organs understand and apply the concept of "significant risk" more accurately. In addition, the legal nature of "significant risk" and the rules for its creation should be clarified, so that judges can make judgments based on clear legal concepts when faced with specific cases, thereby improving the accuracy and consistency of judicial decisions.

4.2 Establishment of sound rules of evidence and standards of proof

In judicial practice, an important issue facing the determination of "significant risk" is how to reasonably allocate the burden of proof and determine the appropriate standard of proof. At present, China's burden of proof rules in preventive environmental civil public welfare litigation, there are unreasonable, often increased the burden of proof of the plaintiff, affecting the protection of their

legitimate rights and interests. In order to solve this problem, special evidence rules and standards for presenting evidence should be established in accordance with the characteristics of preventive environmental civil public interest litigation. For example, the rule of presumption of causation can be applied, and after the plaintiff has provided preliminary evidence to prove the existence of "significant risk", the burden of proof will be transferred to the defendant, who will be required to prove that there is no causality between his or her actions and the possible environmental damage. In addition, the standard of proof should be reasonably adjusted according to the specific circumstances of the case, not only to ensure that the plaintiff can provide sufficient evidence to support its claim, but also to avoid imposing an unreasonable burden of proof on the defendant. For example, in cases involving environmental pollution, the criterion of "evidence advantage" can be adopted. That is to say, as long as the plaintiff can make the evidence provided by the judge to prove that the possibility of a "significant risk" is greater than that of its non-existence, it can be found that "significant risks" exists.

4.3 Strengthening the construction of a mechanism for balancing interests

In the process of identifying "significant risks", how to balance the interests of all parties is an important challenge. On the one hand, it is necessary to give full consideration to the need for environmental protection and to ensure that the identification of "significant risks" can effectively prevent environmental damage. On the other hand, the need for economic development and social stability should also be taken into account, so as to avoid unnecessary impacts on enterprises and economic development caused by excessive identification of "significant risks". In order to achieve a balance of interests, a diversified mechanism for balancing interests should be established. For example, a comprehensive assessment mechanism combining environmental impact assessment and economic impact assessment can be set up to analyze the possible economic impacts while assessing environmental risks, so as to provide a comprehensive basis for decision-making by the judicial authorities. In addition, a public participation mechanism should be introduced to fully listen to the views of all parties and reach a consensus through consultation and communication, so as to achieve a balance and coordination of interests. For example, in environmental public interest litigation involving large-scale construction projects, public hearings can be organized to allow representatives of enterprises, environmental protection organizations, residents and other parties to fully express their views and demands, and to jointly explore how to protect the environment while promoting sustainable economic development.

4.4 Strengthening legislative and policy support

In order to ensure the scientific and rational nature of the identification of "significant risks", it is necessary to strengthen legislation and policy support. First, relevant laws and regulations should be further improved to clarify the specific criteria, procedures and legal responsibilities for the identification of "significant risks". For example, through the development of special environmental risk assessment law or preventive environmental civil public interest litigation law, the "significant risk" identified in all aspects of the detailed provisions, to provide a clear legal basis for judicial practice. Secondly, policy guidance should be strengthened to encourage and support environmental scientific research and technological development to improve the science and accuracy of environmental risk assessment. The government can promote the development and innovation of environmental science by setting up special scientific research funds and establishing environmental risk assessment technology centers. In addition, it should strengthen international cooperation and exchanges, learn from the advanced experience and mature practices of foreign countries in the identification of "significant risks", and continuously improve China's preventive environmental civil public interest litigation system.

5. Conclusion

This article focuses on the systematic study of the determination of "significant risk" in preventive environmental civil public interest litigation, and reveals the main problems in this field in China by analyzing the similarities and differences in the theoretical foundations, determination of the main body, standards, procedures, and the balance of interests both at home and abroad. The article not only combed the relevant theories and practices at home and abroad, but also analyzed the dilemma of the determination of "significant risk" in China's judicial practice by combing with typical cases, such as the green peacock case and the five small-leaved maple case, pointing out that the judge lacks a unified logical paradigm and a complete determination system in the process of determination. Based on this, this paper puts forward a series of targeted improvement measures, including the construction of

scientific and reasonable determination of standards and procedures, clear legal concepts, improve the rules of evidence, strengthen the balance of interests and strengthen the legislative support. These measures are designed to provide theoretical guidance and practical reference for the optimization of China's preventive environmental civil public interest litigation system, promote the construction of China's environmental rule of law to a new level, and help achieve sustainable economic and social development and ecological civilization construction goals.

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