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# PRECAUTIONARY PRINCIPLE: DEFINITION OF BEACONS FOR PRUDENT APPLICATION

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## ABSTRACT

The purpose of this article is to identify and propose the use of criteria for the application of the precautionary principle. There were distortions of the meaning of precaution, which opened the way for its use as a basis for authoritarian decisions and without scientifically consistent arguments, often impregnated with ideological and subjective character. Reasonability, proportionality, adoption in cases of serious and irreversible risks, express motivation, periodic reassessment of decisions and participation of society in a democratic perspective are some of the suggested criteria to guide the application of the precautionary principle. The critical-methodological and legal-propositional methods were used. The aim was to perform a critical analysis capable of proposing criteria for applying precaution in the Democratic State of Law.

**KEYWORDS:** Precautionary principle; Application; Beacons; Definition of criteria.

*PRINCÍPIO DA PRECAUÇÃO:  
DEFINIÇÃO DE BALIZAS PARA A PRUDENTE APLICAÇÃO*

**RESUMO**

*O presente trabalho pretende identificar e propor a utilização de critérios de aplicação do princípio da precaução. Constata-se que houve distorções no significado de precaução, abrindo caminho para a sua utilização como fundamento de decisões autoritárias e desprovidas de argumentos cientificamente consistentes, muitas vezes impregnadas de caráter ideológico e subjetivo, acarretando insegurança jurídica. Razoabilidade, proporcionalidade, adoção nos casos de riscos graves e irreversíveis, motivação expressa, reavaliação periódica das decisões e participação da sociedade sob a perspectiva democrática são alguns dos critérios sugeridos para balizar a aplicação do princípio da precaução. A inobservância desses critérios pode acarretar subjetividade nas decisões, passível de suscitar controle tanto no âmbito interno quanto externo. As linhas crítico-metodológica e jurídico-propositiva foram empregadas na metodologia, pois, a partir do olhar sobre a realidade, buscou-se realizar uma análise crítica capaz de orientar a propositura de critérios de aplicação da precaução sob a luz do Estado Democrático de Direito.*

***PALAVRAS-CHAVE:*** *Princípio da precaução; Aplicação; Segurança jurídica; Balizas; Definição de critérios.*

## INTRODUCTION

The origins of the precautionary principle date back to the early 1970s, when the intensification of industrial production raised questions about the risks of anthropic activities on human health and the environment. Germany and Sweden are examples of countries that require precautionary measures by companies using hazardous products.

In the 1980s, international agreements and treaties began to insert the precautionary principle in their texts, a prediction that motivated several countries to include precaution in their domestic legal systems. In addition, expressly stated in Principle 15 of the Rio Declaration, a document prepared in the framework of the United Nations Conference on Environment and Development in 1992, precaution was added to the prevention in the roll of principles aimed at avoiding or minimizing the damage to the environment and human health.

The precautionary principle was then applied more frequently by national courts and international courts, as well as, at the administrative level, by the public agencies responsible for the exercise of the environmental police power of various countries. However, due to the diversity of formulations within national and international standards, and also the absence of a single statement and uniform assumptions for its application - universally accepted for precaution - resulted in interpretations that are far from the perception that gave rise to postulated in its original meaning. This new guise of the precautionary principle gave power to channelling authoritarian decisions devoid of scientifically consistent arguments. The emptying of the sense of precaution has given rise to unreasonable situations and has often challenged legal certainty.

What are the guidelines for orienting the proper application of the precautionary principle in the Democratic State of Law? The purpose of this research is to present adequate legal responses to this question. The aim of the work is therefore to identify and suggest the use of criteria for applying the precautionary principle.

It is important to note that there is now a clear difficulty in interpreting the precautionary principle, both by the public administration bodies responsible for managing environmental patrimony, and by the judges responsible for the analysis and final decision of the concrete cases.

The nuclear idea that animates the purposes of research on the definition of guidelines for the application of the precautionary principle consists precisely in the finding of the abstract part of the legal norm itself classified as a principle.

The methodological lines used were critical-methodological and legal-propositional, since from the look on reality we sought to develop a critical analysis capable of guiding the proposition of clear criteria for applying precaution, which may contribute to the improvement of the administrative and judicial decisions consistent with the pillars of the Democratic Rule of Law.

## **1. THE ORIGINS AND OBJECTIVES OF THE PRECAUTIONARY PRINCIPLE**

The precautionary principle calls for the implementation of reasonable measures to prevent environmental degradation in situations of danger of serious and irreversible damage resulting from activities or techniques whose impacts can not yet be clearly identified by science. Caution should guide the actions of the public power whenever there is scientific uncertainty regarding the environmental impacts of a given enterprise.

The Swedish law on dangerous products for man and the environment, adopted in 1973, is considered the first to provide for the adoption of precautionary measures by those using hazardous products. However, Varela and Zini (2015), Sampaio (2003) and Wolfrum (2004) teach that the Germans were the ones responsible for explaining the precautionary principle (*die Vorsorgeprinzip*) in the Water Protection Act, which included as a State duty the prevention or reduction of future environmental damage even in the absence of present risks.

The precautionary principle, also called *princípio da cautela*, or *prudência* (VARELA; ZINI, 2015), has gained evidence since the 1980s, with the adoption in international agreements and treaties of norms designed to avoid or mitigate emissions of ozone-depleting substances from the planet, such as chlorofluorocarbon gas (CFC). Gouveia and Freitas Martins (2002) reports that, since 1976, a number of countries have voluntarily adopted measures to reduce the emission of these gases. Sunstein (2005) recalls that, in 1982, the United Nations World Charter for

Nature apparently recognized the principle in providing that while potential adverse effects are not known, activities should not begin. It should be noted, however, that it was only in 1985 that the first multilateral agreement on the subject, internationally known as the Vienna Convention for the Protection of the Ozone Layer, was consolidated. The document already determined the adoption of precautionary measures in order to avoid the realization of damage to the planet's ozone layer. (THOMÉ, 2014).

Two years later, in September 1987, the Montreal Protocol on Substances that Deplete the Ozone Layer was drafted, under which all efforts should be made to eliminate the production and consumption of ozone-depleting gases. The preamble emphasizes the prediction of the need to adopt precautionary mechanisms:

Determined to protect the ozone layer by taking precautionary measures to control the overall volume of emissions of harmful substances, the ultimate goal is to eliminate them based on the evolution of scientific knowledge taking into account technical and economic considerations, in addition to development needs of developing countries. (Authors translation). (UNITED NATIONS DEVELOPPEMENT PROGRAM, 2013).

Precaution gains strength as a principle of environmental law at the international level at the Second International Conference on the Protection of the North Sea in 1987, which provided for targeted measures to encourage the use of best available technologies in the absence of scientific evidence attested to the causal link between emissions of persistent, toxic and bioaccumulating substances and their effects on the ocean .(FREITAS MARTINS, 2002; WOLFRUM, 2004).

But it is at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 that the precautionary principle has been consolidated as a guarantee against potential risks that, according to the current state of knowledge, can not be identified. In the absence of formal scientific certainty , the existence of a risk of serious or irreversible damage requires the implementation of measures that can predict, minimize and/or avoid this damage. According to Principle 15 of the Rio Declaration of 1992,

[...] in order to protect the environment, States should apply the precautionary

approach widely according to their capabilities. Where there is a danger of serious and irreversible damage, the lack of absolute scientific certainty should not be used as a reason to postpone the adoption of effective measures to prevent environmental degradation. (NAÇÕES UNIDAS, 1992).

The precautionary principle was introduced in Community law in 1992 by the Treaty of Maastricht, also known as the Treaty on European Union, when it was raised to the principle of European Union environmental policy. (MARCIANO; TOURRÈS, 2011).

The French Environmental Charter of 2005 also foresees the precautionary principle:

Article 5 - When the possibility of any occurring damage, even if uncertain the state of scientific knowledge, can seriously and irreversibly affect the environment, public authorities will guarantee, applying the precautionary principle in their fields of action, the implementation of procedures for the assessment of risks and the adoption of provisional and proportional measures in order to avoid the occurrence of damage<sup>1</sup>.

The origins and objectives of the precautionary principle were analyzed from a historical perspective by the French philosopher François Ewald (1996). The precautionary principle would result from the sequential evolution of three succeeding social responsibility organization regimes. (THOMÉ, 2014).

The first regime, called the welfare state, would have been structured on the basis of the concept of individual responsibility and guilt, which had been in force for much of the nineteenth century. The second regime, of solidarity, developed during the twentieth century based on the idea of social solidarity. The third regime, on the other hand, is based on the concept of security, in which the precautionary principle is presented as an alternative for managing uncertainty. (EWALD, 1996).

For the French author, the welfare state has individual responsibility and virtue as focal points. Thus, under the sign of individualism, any social actor can use his personal freedom to act with prudence. The dangers and

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<sup>1</sup> FRANCE, 2005, author's translation. "Article 5 – Lorsque la réalisation d'un dommage, bien qu'incertaine en l'état des connaissances scientifiques, pourrait affecter de manière grave et irréversible l'environnement, les autorités publiques veillent, par application du principe de précaution et dans leurs domaines d'attributions, à la mise en oeuvre de procédures d'évaluation des risques et à l'adoption de mesures provisoires et proportionnées afin de parer à la réalisation du dommage."

risks of everyday life are assumed by the individuals themselves, without any state support, as a result of the theory of economic liberalism in force at the time (THOMÉ, 2014).

In the transition from the Liberal State to the Social State, in the light of equality, the State began to guarantee social rights, including recognition of the right to indemnity against the “dangers of life” . In the state of social welfare, these new rights make it possible to change the relation between human being and risks. At that time, the concept of risk was directly related to situations of insecurity, materially perceptible, such as illness, misery and insecurity. Until then, science had been able to predict the negative effects of risks, enabling the State to act. (THOMÉ, 2014). In this way, the concept of responsibility took the form of a preventive approach, possible due to technical and scientific knowledge.

The third period, according to Ewald (1996), opens with environmental issues in the 1960s and 1970s, gravitating around the concept of “security.” The community recognizes its vulnerability to new risks arising from human activities and to the fallibility of science to identify and prevent them. Differently from what happened in the Social State, those affected by the negative impacts on the environment have a new perception of the idea of harm, now characterized by its scope, gravity and irreversibility. Science becomes criticized (internal and external) and the system of reparation and financial compensation are no longer adequate to the new characteristics of the damage. The need to avoid the concretion of social and environmental damages was then realized.

The precautionary principle is therefore considered as a guarantee against potential risks which, according to the current state of knowledge, can not be identified yet. (THOMÉ, 2018). Furthermore, the precautionary principle can be considered as an instrument that reflects a characteristic of the human being: the precautionary approach, according to which the human being aims to reduce the risks to which he is exposed (Beck, 2008). This approach has emerged as an environmental policy imperative. When faced with a situation where the effect of the damage is uncertain, the precautionary principle requires a more conservative stance on risk-taking , but should be based on criteria that avoid legal uncertainty and subjective interpretation which is disconnected from reality (MATA DIZ; SANTOS, 2016).

For Édis Milaré (2015, p. 264),

the invocation of the precautionary principle is a decision to be taken where scientific information is insufficient, inconclusive or uncertain and there are indications that possible effects on the environment, human or animal health or plant protection may be potentially dangerous and incompatible with the level of protection chosen.

Naves and Silva (2014, p. 369) consider the precautionary principle as a guarantee against potential risks that “corresponds to the duty of caution with regard to scientifically uncertain risks generated by a given activity or enterprise.”

In the legal framework of the country, some laws refer expressly to the precautionary principle, such as the Lei de Biossegurança (Law on Biosafety) (Law 11.105/2005), which establishes as guidelines, in its article 1, “the encouragement of scientific advances in the field of biosafety and protection of human, animal and plant life and health, and observance of the precautionary principle for the protection of the environment”, and the Lei de Política Nacional sobre Mudança no Clima (National Policy on Climate Change Law) (Law 12.187/2009), which, according to of its Article 3 should observe “the principles of precaution , prevention, citizen participation, sustainable development and common but differentiated responsibilities (...)”. Article 12 (2) of the Law 12.608/2012 (Environmental Disasters Act) refers implicitly to the precautionary principle, stating that “uncertainty about disaster risk shall not be an obstacle to the adoption of preventive and mitigating measures of the risk situation.”

With its consolidation since the 1990s, the precautionary principle has been used and invoked more frequently both in the legal system of many countries and in international courts, such as the International Court of Justice, the International Tribunal for the Law of the Sea and the Court of Justice of the European Union (SUNSTEIN, 2005). Discussions on the impacts still unknown to the environment and human health, such as those involving the decisions of the World Trade Organization (WTO) in the case of meat with hormones<sup>2</sup>, of the *Conseil d’État français* on the

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<sup>2</sup> In the Appellate Body’s decision to adjudicate this case, there was intense debate regarding the categorization of precaution as a general principle of law, as “The status of the precautionary principle in international law remains the subject of debate among scholars, of law, regulators and judges. Some consider that the precautionary principle has crystallized into a general customary principle of international environmental law. The question whether the principle has been accepted by Members as

marketing of genetically modified maize (BOISSON DE CHAZOURNES, 1999) or of the decision of the Court of Justice of the European Union on bovine spongiform encephalopathy (also known as “mad cow”, 1998) assured heated debates about the limits of application of the precautionary principle.

At the national level, some decisions of the higher courts also adopted the precautionary principle as a foundation of support, as in the Supremo Tribunal Federal (Federal Supreme Court) (STF) judgments in the case of non-compliance with fundamental precept 101 (2009) and in the declaration of unconstitutionality 3540 (2010) or the Superior Tribunal de Justiça (Superior Court of Justice), in the special resources 972.902 and 1.060.753, both published in 2009.

The analysis of decisions, judicial and administrative, national and international, leads to the conclusion that, in the last years, the disputes have intensified. Distorted interpretations of the precautionary principle are clearly evident, and this has the potential to interfere negatively with its primary function of implementing sustainable development.

There is no doubt about the relevance of the precautionary principle to Environmental Law. But its remarkableness can not lead the interpreter to invoke it indiscriminately to any and all modality of situation in which the risk to the environment is present. Its incidence is only legitimized when it is based on pre-established criteria and, still, within certain limits, under penalty of distortion of its normogenetic objectives and its consequent trivialization, which would imply their inapplicability by emptying.

## 2. CRITICAL ANALYSIS OF THE PRECAUTIONARY PRINCIPLE

Initially it is important to note that a considerable part of the distortions of meaning is due to the fact that the precautionary principle has been the subject of numerous formulations within national and international standards. There is no single statement and a uniform interpretation, universally accepted for precaution, which makes it difficult to understand a general or customary principle of international law seems even less clear. We consider, however, that it is unnecessary, and probably imprudent, for the Appellate Body in this controversy to position itself on this important but abstract issue. We note that the Panel has not taken a final decision with regard to the status of the precautionary principle in international law and that the precautionary principle, at least outside the scope of international environmental law, is still awaiting a more authoritative body (WORLD TRADE ORGANIZATION, 1998, p. 45 to 123, author’s translation).

them and, consequently, to apply them to concrete cases. He warns Antunes (2016, p. 68) that its excessive expansion and “its conceptual indefiniteness are destabilizing elements of the legal order, (...) the exact opposite of what is expected of a legal principle.”

Moreover, it is common to perceive a conceptual confusion between the precautionary principle and the responsibility principle, idealized by Hans Jonas (2006). The precautionary principle, based on scientific data and a likelihood logic, must be understood from a concrete risk management perspective based on the causal link between the activity and the risk of serious and irreversible damage to the environment. The responsibility principle, in turn, flirts with the abstract because it was built as an exercise in long-term anticipation. It will certainly make an interesting decision from the ideal point of view, but that will, for the most part, be pragmatically unsustainable.

For Marciano and Tourrés (2011), the principle of responsibility seeks the desirable in the name of an ethics of prudence, but does not fit the hypotheses susceptible of judicialization, presenting itself inadequate to substantiate an action in justice. The principle of liability is not, according to the authors, predictable in law.

While the principle of responsibility has greater scope and breadth, the precautionary principle has practical and well-defined objectives. It deals with the environment and human health, almost always interconnected, not dealing with broader questions, metaphysical, related to the preservation of human existence and its authenticity.

It would not be absurd to say that the principle of responsibility functions as a compass in relation to the precautionary principle. However, there is no doubt about the difference between them, although some insist on relating them and even (con)fusing them. Its objectives and its mode of application are different. So dissimilar that the initiator of the responsibility principle, Hans Jonas, did not address in his book the precautionary principle (*Vorsorgeprinzip*). Surprising (and coherent) omission, Marciano and Tourrés (2011) note, because at the time of publication of the book (1979), questions related to the precautionary principle had been discussed for years in Germany.

In addition to the confusion with the principle of responsibility, it is found that the precautionary principle is often used as the basis for

authoritarian decisions and devoid of scientifically consistent arguments. In recognizing the excess of its use in the current days, the Federal Supreme Court affirms that the precautionary principle

is not absolute, and the exaggeration in its application has generated complaints not only in the European Community but throughout the world. Kenneth R. Foster, a professor in the Department of Bioengineering at the University of Pennsylvania, in his celebrated article (The Precautionary Principle: Common Sense or Devil's Handwork? *Sigma Xi*, Newark NJ, February 2002), warned that there were numerous disagreements over the content of the principle and the extent of its effects, which would be causing problems for European states, in particular France, where in many cases, had as its real objective to enforce a commercial protectionism or, therefore, ended up being used simply as a discursive factor of political or sociological character by people normally opposed to changes. This author, even recalling the "seven slippery aspects of precaution" originally referred to by David Vander Zwaag, an eminent Canadian researcher and environmental law expert (see article on the Social Science Research Network, *The Precautionary Principle and Marine Environmental Protection: Slippery Shores, Rough Seas, walks Rising Normative Tides* (2002).<sup>33</sup> (2) *Ocean Development & International Law*, 165), goes so far as to warn that the principle still remains flexible in its definition. (BRASIL, 2016).

This conceptual gap provides scope for the use of the precautionary principle as justification for making arbitrary and disproportionate decisions, often impregnated with ideological and subjective character. "The lack of operational guidelines for the application of the precautionary principle transmits it as an instrument of risk management in a simple manner", points out Antunes (2016, p. 74).

These distortions give rise to situations of legal uncertainty that can and should be corrected by adopting criteria and targets for the application of the precautionary principle in line with the principle of sustainable development and the rule of law.

### **3. DEFINITION OF BEACONS FOR THE APPLICATION OF THE PRECAUTIONARY PRINCIPLE**

Notwithstanding the importance of adopting precautionary

mechanisms to avoid, or at least minimize, irreversible damage to the environment, it is understood that there is a need to define clear goals for applying this principle.

In order for the Public Power to be considered legitimate, a range of limitations and guidelines imposed by the current relationship established between the State and the private sector must be observed, respecting the postulates of the Democratic Rule of Law. (THOMÉ, 2013). In the context of the application of environmental protection standards, such beacons should also be well defined, especially in matters involving restriction or limitation of the development of certain activities, technologies or enterprises.

Without pretending to exhaust the theme, we will analyze below some alternatives to adjust the application of the precautionary principle to the prerogatives of the Democratic State of Law.

### 3.1 Severe and irreversible risks

Not all risks require the application of precautionary measures, but only those considered serious and irreversible, ie those estimated as the most dangerous to human health and the environment. The application of the precautionary principle therefore presupposes that two distinct and successive stages must be overcome: I) the identification of the existence of risk; II) the characterization of risk as serious and irreversible.

It is worth remembering that all human activity generates some kind of risk to human health or the environment, without a zero level of risk or impact. Thus, applying the precautionary principle to any type of risk arising from anthropic activities would prevent scientific and technological advancement. Sampaio (2003, p. 60), when analyzing the various interpretations of the principle, notes that the precaution in its strong, more rigorous design “may lead to the conclusion that no new technology, activity or product will meet the requirement of precaution”.

The application of the precautionary principle is therefore not intended to establish a zero level of environmental risk (unreachable target), but rather to manage the serious and irreversible risks arising from human activities. According to Gullet (2000), the precautionary principle does not advocate a zero-risk policy, but only that due importance should be given

to the protection of public health and the environment where the available scientific information is insufficient for decision. Therefore, this criterion, *per se*, and applied on an individual basis, should not be considered as the sole basis to support the application of precaution.

In the same sense, it is the understanding of the Federal Supreme Court (2016) that

(...) it is incorrect the affirmation that this principle should be applied when there is no total control over actual or potential risks. This is because I think that there will hardly be a product or service that can be free of any risk to health or, as the case may be, to the environment.

In the decision of Recurso Extraordinário (Extraordinary Appeal) 627.189 in 2016, the STF also highlights the precedent of the Court of Justice of the European Community of 2002 (Case C-241-01) according to which precautionary measures should not be an attempt to achieve a “zero risk” nor can they justify the adoption of arbitrary decisions.(BRASIL, 2016).

It is therefore necessary to situate the precautionary principle in the current stage of relativism of contemporary scientific knowledge. Once the limits of science, including the inability of scientists to analyze the risks of certain activities to the environment, were admitted, would not that incapacity lead to paralyzing doubt if the precautionary principle were applied to all kinds of risks? How can we prove that an activity or an action is not likely to cause any kind of risk to the environment?

Several national and international courts have already concluded that prudence should guide the application of the precautionary principle.

In the celebrated decision of the *Gabcikovo versus Nagimaros* case of September 25, 1997, the International Court of Justice (CIJ) took into account the precautionary principle, but it did not go further. In the decision, which examined the reciprocal violation of rules concerning the use of the Danube river by Slovakia and Hungary, the court acknowledged that the parties agreed on the need to seriously concern themselves with the environment and to take all necessary precautionary measures, but that they were fundamentally at odds over the consequences and risks that could result from the joint project (construction and operation of a hydraulic

dam system), which made it impracticable to apply the precaution to the concrete case.

In 2010, the International Court of Justice, as well as in the *Gabcikovo versus Nagymaros* case, took into account the precautionary principle in the “*Caso das Papeleras*” decision, in which the Argentine Republic and the Republic of Uruguay were included as parties, although it was not decisive. In this case, according to Argentina, Uruguay would have breached obligations under the Uruguay River Statute, signed by both countries in February 1975. According to the Argentine request, the violation of the statute would result from the possible start-up of two paper mills installed in the Uruguay River, which would have had negative effects on the quality of the waters of that river and its zone of influence.

The decision of the ICJ, which had as merit to recognize the environmental impact assessment as a matter of international custom (TOLEDO, RIBEIRO, THOMÉ, 2016), did not apply the precautionary principle for the reversal of the burden of proof requested by Argentina. The Court considered that, while the precautionary approach may be relevant to the interpretation and application of certain provisions of the 1975 Statute, it does not have the effect of reversing the burden of proof. In addition, it is concluded from the decision that the ICJ was not convinced by Argentina about Uruguay’s failure to comply with the precautionary principle.

In Brazil, the Federal Supreme Court, recognizing the impossibility of applying the precautionary principle to any type of risk arising from anthropic activities, considers that “the existence of such risks arising from scientific uncertainties should not produce a paralysis of the state or of society.”

In decision-making, the public authority must therefore take into account that the precautionary principle does not apply to any type of risk to the environment or to human health, but only to those cases where there is a risk of significant and irreversible damage. (PARGA; MASEDA, 2001).

### **3.2 Reasonability and proportionality**

Since the Federal Constitution of 1988, the relationship established between the State and the private sector becomes more dialogic

and less taxing, in the light of fundamental rights and popular participation that limit state action. With the consolidation of the Democratic Rule of Law, there is a need to review the classic categories of Administrative Law and a new approach to state action.(THOMÉ, 2013).

For Justen Filho (2006, p. 18) “in Brazil, in particular, it is imperative to emphasize the need to revise administrative law, which is still embedded in non-democratic conceptions from the past.” The author also emphasizes that

the state administrative activity continues to reflect personalistic conceptions of power, in which the ruler intends to imprint his personal will as a criterion for validity of administrative acts and to invoke individual projects as grounds of legitimation for the domination exercised.(JUSTEN FILHO, 2006, p. 18).

The action of the Public Power based on the pillars of authoritarianism that was once in force, capable of affecting the sphere of rights of freedom and property of the citizen, is considered to be flagrantly illegitimate conduct.

The discretion of the Public Administration, long regarded as absolute and intangible, is gradually replaced by the notion of freedom bound and rationally justifiable. Freitas (2004, p. 26) affirms that “all discretion (on the level of the commandments - *Tatbestand* - or in the election of consequences) remains bound up with fundamental principles, from which the absence of pure discretion is extracted.”

In order to be considered legitimate, it is required the express justification of the acts of the Public Administration. The administrative rules should always be in line with the fundamental principles guaranteed constitutionally, so public officials should not abide by commandments that violates these principles. (THOMÉ, 2013).

Freitas (2004) also outlines some fundamental principles that should govern management relations in Brazil, such as the principle of proportionality or axiological adequacy and the simultaneous prohibition of excess and ineffectiveness.

The principle of proportionality (adequacy, necessity and proportionality in the strict sense) is an essential instrument limiting acts of the Public Authorities, especially of acts deriving from administrative police power, since it establishes evaluation and control parameters, and

can be used to force the review of state acts.

The principle of proportionality, or the prohibition of excess, originally concerns the limitation of the executive power, and is taken as a measure for the administrative constraints of individual freedom. Says Canotilho (2003, p. 267) that “the principle of proportionality in the broad sense, also known as the principle of prohibition of excess (*Übermassverbot*), was erected to the rank of constitutional principle” in several countries.

For Canotilho (2003, p. 268), “by means of jurisprudential *standards such as proportionality, reasonableness, prohibition of excess, it is now possible to reinstate the administration (and, in general, the public authorities) on a less overarching and uncontested level relative to the citizen*”.

It is important to note that the most relevant field of application of the principle of prohibition of excess is the restriction of rights, freedoms and guarantees by acts of the Public Power, be they emanated by the Legislative, Executive or Judiciary. It should also be remembered that the Public Administration always observes the principle of the prohibition of excess, especially in cases where it has discretion in its decisions. (CANOTILHO, 2003, p. 272)

The acts of the Public Administration must obey the principle of proportionality in its threefold dimension (adequacy, necessity and proportionality in the strict sense ).To Freitas (2004, p. 245),

the administrative limitation must be in accordance with the old principle of proportionality, which has come to be adopted as a version of Aristotle’s complex notion of the *fair middle (mesotes)*.(...) Expressively suggestive of the principle, Fritz Fleiner, chanting with Walter Jellinek, proclaimed: “Police should not use guns to shoot sparrows.”

The application of the precautionary principle, both by the Public Administration and by the Judiciary, must observe the requirements of proportionality and reasonableness. Applying precaution does not mean, as some people understand, banning *ad aeternum* any kind of activity or undertaking that poses any risk to the environment or human health. The lack of scientific certainty is a reason for adopting measures of

environmental protection. These measures, it should be remembered, can also be restrictive (not always prohibitive). By restricting the planting of genetically modified organisms to certain areas previously approved by the public authority, the precautionary principle also applies.

The Federal Supreme Court (2016) understands that

If there are relevant elements of conviction about the risks, the State must act in a proportional way. Their proper application in the material dimension should enable risk research to take place on the “distant consequences both in time and in place, [on] damage to particularly sensitive goods, [on] mere disturbances and even [on] scarce risk probability”, in order to allow the adoption of pertinent and proportionate measures (cf. Gerd Winter. *A Natureza Jurídica dos Princípios Ambientais em Direito Internacional*. In, KISHI, Sandra A. S., SILVA, Solange T. Da e SOARES, Inês V. P. (Org.). *Desafios do Direito Ambiental no Século XXI*. São Paulo: Malheiros, 2005, p. 144).

Excessive application of precaution can lead, in certain situations, to the emergence of new risks for the environment and to human health, and even cause damages to third parties. Sunstein (2005, p. 33) warns that “the State must act with caution, in its balanced version, only when it has suitable motives to induce a proportional anticipatory intervention, within the limits of the normative structure. If he does not, then he will be a participant in the generation of irreversible damage or of difficult reparation.”

The Commission of the European Union, with the aim of guiding decision-making on the basis of the precautionary principle, indicates as elements to be observed when risk management is involved: a) the proportionality between the measures adopted and the level of protection chosen ; b) non-discrimination in the implementation of measures; c) and the consistency of the measures to be taken with those already adopted in similar situations or using similar approaches. (BRASIL, 2016).

The STF (2016) understands that the adoption of the proportionality criterion is essential for the proper equation of the elements that lead the public administration to act and implement precautionary measures.

It is worth remembering that the application of the precautionary

principle is subject to administrative and jurisdictional control, especially with regard to the assessment of the legal limits of discretion and compliance with the proportionality regarding the measure adopted.

### **3.3 Express motivation and basis**

Evidence of the likelihood of claims should be a prerequisite for the adoption of the precautionary principle in decisions related to environmental issues. A decision, whether administrative or judicial, can not be admissible if it is based only on frivolous claims which have causally established hypotheses by way of deduction. Precautionary measures can not be adopted on the basis of hypothetical risk claims, based on mere conjecture without any scientific verification.

Marciano and Tourrès (2011) emphasize that the indexical logic is not of the same order of rigor of traditional causality. However, it does not result from pure subjectivity, but from probability, either from what appears to be true, or from the converging bundle of available data, capable of strengthening the hypothesis emitted in the synthesis of these clues.

Recognizing the need for a legal basis based on a verisimilitude judgment for its application, the Federal Supreme Court (2016) states that

the principle of precaution, which is endowed with direct efficacy, imposes on the Democratic Rule of Law a set of non-distortable measures, in the sense that the obligation to safeguard, to guarantee the fundamental right to a healthy environment, will occur with the adoption of proportional measures, even in cases of uncertainty as to the production of fundamentally feared damages, that is, in the case of verisimilitude.

Thus, the serious and irreversible risks arising from the lack of absolute certainty regarding the negative impacts of an activity must be pointed out, in each concrete case, objectively, under penalty of becoming a theoretical and abstract discussion that is more sensitive to the principle of responsibility and not to the precautionary principle.

There is, therefore, the possibility of judicial control of public policies based on the precautionary principle, provided that it is possible to analyze concretely the elements that justified its application. In this

sense, it is the understanding of the Federal Supreme Court that “there is no prohibition on the judicial control of public policies regarding the application of the precautionary principle, provided that the judicial decision does not depart from the formal analysis of the limits of this concept and privileges the democratic choice over the discretionary choices made by the legislator and the Public Administration.” (BRASIL, 2016).

### 3.4. The democratic perspective of precaution

The analysis of the different State models makes it possible to infer that the Democratic State of Law is the one that ensures popular participation and social control from the elaboration to the implementation of public policies, recognizing itself as a founding element for the conception of the State itself. The democratic instruments gradually raised their used with the objective of opportunitizing the effective action of society’s exercise of power. Public agents, who directly exercise political power, become the direct representatives of the people, whom he chooses. As a result, the rights guaranteed in the rule of law have been extended. (THOMÉ, 2014).

In the Rule of Law, the limitation of action of the Public Power is verified from the empire of law, as the observance of legal norms also by the State. (THOMÉ, 2014). The ideas of “government of laws and not of men” have been implemented by institutes such as those of *Rule of law*, *Always under law*, *Rechtsstaat*, among others. However, according to Canotilho (2003, p. 98), “something was lacking in the constitutional state of law - the democratic legitimacy of power.”

For Sundfeld (2012) the Democratic State of Law encompasses the notions of constitutionalism, direct popular participation, separation of powers, legality, and individual and political rights.

In Brazil, from the Federal Constitution of 1988, the relationship between State and citizen became more dialogic and less taxing. There is no doubt that the democratic principle presupposes the fragmentation of the idea of supremacy of Public Administration, an idea that has been impregnated in the relationship between State and citizen since the nineteenth century and a large part of the twentieth century. (FREITAS, 2004).

For Marciano and Tourrès (2011), the responsibility principle, by Hans Jonas, is democratically unsustainable, since it does not open for discussion in the public space. The lack of lucidity attributed to the people by Jonas justifies in principle the responsibility of a “benevolent tyranny” led by a small number of “sages” or “experts”. In criticizing Jonah’s position, the authors argue that, with respect to the democratic principle, “living together” requires that risks to be accepted or discarded “together.”

The precautionary principle, on the other hand, starting from a logic of verisimilitude and, therefore, from the commensurable one, produces arguments that the political sphere can debate in the scope of the society, that is, in the democratic sphere. The precautionary principle should therefore not be used as grounds for authoritarian decisions and devoid of scientifically consistent arguments, inadmissible in the Democratic State of Law. In this sense, participation in decisions regarding the environment and human health becomes an unavoidable corollary of the concept of democracy, especially when it comes to promoting dialogue in the public-private relationship

The “benevolent tyranny”, according to Hans Jonas (2006), is inevitable, given the environmental urgency we are in and the lack of lucidity or will of the citizens is based on the principle of responsibility, but does not conform to the principle of precaution, which requires democratic debate. This deliberation presupposes the periodic reassessment of decisions taken from the idea of precaution.

### **3.5 Need for periodic reassessment of decisions taken on the basis of precaution.**

Transience is intrinsic to the precautionary principle, which further enhances its risk management objective. Louis-Marie Houdebine, quoted by Tourrès and Marciano (2011), in investigating the foundations of the precautionary principle, states that it should be applied to new activities and technologies with the potential of generating serious risks that can not yet be demonstrated by science. However, it warns that precautionary interruption of activities should be temporary, requiring periodic reviews of scientific knowledge so that a sterile waiting period is not set. Thus, at the end of the “quarantine” period, the Public Power should position,

favorably or otherwise, the continuity of that activity, grounding its decision on scientific studies and popular debates developed during that period of time. (THOMÉ, 2014).

It is expressly stipulated that this principle should be applied only for limited periods of time and at a reasonable cost to society. The application of the precautionary principle implies an interruption in the development or implementation of a technique. During this period, studies should be conducted in order to try to assess the risks of the activity. At the end of this period, a decision must be taken, whether for continuity of investigation and quarantine, or to authorize the implementation of the new technique. Under no circumstances should a precautionary principle be a sterile waiting period. (HOUDEBINE, apud TOURRÈS; MARCIANO, 2011, p. 37)<sup>3</sup>.

The German Rüdiger Wolfrum (2004, p. 20) also considers that “if an activity has been prohibited or restricted on the basis of the precautionary principle, the uncertainty under which this decision has been taken must be re-examined at regular intervals. New discoveries, as well as new developments, must be taken into account.”

The analysis of the risks to the environment should not therefore lead to an unchanging, unquestionable and definitive decision. After all, the scientific discoveries take on the mantle of transience. Thomé (2014, p. 203) understands that

the core idea that animates the purposes of the precautionary principle is that risks can be evaluated over a reasonable period of time, taking into account the most diverse and transdisciplinary variants brought by both the scientific community, society and democratically legitimized bodies.

Thus, there will be elements capable of assisting and grounding decision-making in relation to activities potentially causing serious and

<sup>3</sup> HOUDEBINE, apud TOURRÈS; MARCIANO, 2011, p. 37, author’s translation. “Il est expressément stipulé que ce principe ne doit être appliqué que pendant des temps limites et à un coût raisonnable pour la société. L’application du principe de précaution implique un arrêt du développement ou de la mise en oeuvre d’une technique. Pendant ce moratoire, des études doivent être menées pour tenter d’évaluer les risques que l’on redoute. À la fin de cette période, une décision doit être prise pour poursuivre les recherches et le moratoire ou de les arrêter pour autoriser la mise en oeuvre de la nouvelle technique ou au contraire de l’interdire. En aucun cas, le principe de précaution doit représenter une période d’attente stérile.”

irreversible risks to the environment.

Similarly, the French *Conseil Constitutionnel* considers that, in examining the application of the precautionary principle to the establishment of permanent provisions prohibiting any method of hydraulic rock mining for the exploration and exploitation of liquid or gaseous mines (shale gas) stated that “public authorities shall, by applying the precautionary principle and in the fields of their competence, ensure the application of risk assessment procedures and the adoption of provisional and proportionate measures in order to prevent the occurrence of damage<sup>4</sup>.” (author’s translation). (FRANÇA, 2018).

It was clear that the French Constitutional Council refused to consider that precaution is a principle capable of supporting constitutional rules introducing measures that are not provisional and temporary. (*see* decisions no. 2013-346 QPC October 11, 2013 and no. 2014-694 CD May 28, 2014 of the *Conseil Constitutionnel*).

The Brazilian Supreme Court (BRASIL, 2016) was well advised to recognize precaution as a component of risk management, and to recognize the existence of verification of certain assumptions for its adoption in concrete cases, one of them being that “the decision should be subject to a review whenever new scientific data are obtained”.

In deciding Extraordinary Appeal 627.189/SP, in 2016, the STF refers to a document prepared by the European Commission (COM/2000/0001)<sup>5</sup> which, in order to avoid excessive abstraction and subjectivism in understanding the precautionary principle, and in order to avoid discriminatory or inconsistent decisions on measures to control the impacts of certain activities on the environment, suggests adoption of the following premises considered as conceptual elements of the precautionary principle: a) the principle is a risk management component; b) the political decision to act or not to act should be informed by the decision-making body about the degree of uncertainty regarding the results of the evaluation of the available scientific data; and, c) in the event of deciding to act, the measures to be adopted must respect some specific assumptions.

The assumptions made by the Commission of the European

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4 “(...) les autorités publiques veillent, par application du principe de précaution et dans leurs domaines d’attributions, à la mise en œuvre de procédures d’évaluation des risques et à l’adoption de mesures provisoires et proportionnées afin de parer à la réalisation du dommage”.

5 COMISSAO EUROPEIA. Comunicação da Comissão relativa ao princípio da precaução. Bruxelas, 2.2.2000 – COM (2000) 1 final, available at <https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:52000DC0001&from=PT>, accessed on December 03, 2013.

Union and recognized by the STF are appropriate targets for guiding the application of the precautionary principle:

a) the measures must be proportionate to the level of protection chosen; b) respect for non-discrimination in its application; c) the State imposing prior administrative approval on products and services which it considers to be hazardous should, *a priori*, reverse the burden of proof and consider them to be hazardous until the parties concerned carry out the scientific work necessary to demonstrate compliance with the safety requirement, and if the State does not require such prior authorization, it is the responsibility of the public authorities or the person concerned to demonstrate the level of risk (for a *posteriori* approval ); d) a permanent requirement that interested parties be offered scientific information to analyze the potential advantages and costs of action or inaction; e) actions consistent with similar measures already taken; f) the decision adopted should be subject to review once new scientific data have been obtained. (COMISSÃO DA UNIÃO EUROPEIA *apud* BRASIL, 2016).

As can be seen, the singularities of the precautionary principle impose on the State the observance of assumptions for a fair and coherent performance with the scientific conclusions in force at the time of its practice, without prejudice to the possibility of revision in its content whenever new scientific data guides it. This periodic reassessment legitimates the precaution in its current perspective of the degree of scientific certainty, an element that is inseparable from it.

## CONCLUSION

There is no doubt that avoidance or mitigation of damage to the environment is the primary objective of environmental standards, in view of the herculean task of repairing it after verification of its degradation. In this context, the principles of prevention and precaution, important socioenvironmental risk management instruments, are relevant.

The precautionary principle, regarded as a guarantee against potential risks which, according to the present state of knowledge, can not yet be identified, originated in Swedish and German norms in the 1970s and was then included in international treaties and in the domestic legal system of many countries.

Despite the relevance of the objectives of the precautionary principle, due to conceptual variations and the absence of a single statement and a uniform interpretation, distortions in its meaning were achieved, resulting in administrative and judicial decisions dissociated from the expected action in States of Democratic Right.

The present work seeks to retake the debate on the limits to the application of the precautionary principle, besides, without the pretension of exhausting the subject, to point out some beacons for its use by the public power. Several national and international courts, such as the Federal Supreme Court, the French *Conseil Constitutionnel* and the International Court of Justice, have already recognized the need to delimit clear boundaries in order to align the precautionary principle with its legitimating nucleus.

It is important to note at the outset that precautionary measures should be applied in the concrete situations in which risk to the environment and human health is established, and provided that this risk can be characterized as serious and irreversible. Not being identified the risk or, even if identified, it is not considered serious and irreversible, no precautionary measures will be taken. In addition, the risk criterion can not be dissociated from the other elements and/or assumptions that guide the very definition of the principle.

If the assumptions for the application of the precautionary principle are present, their impact on the case must comply with the requirements of proportionality and reasonableness. The Public Administration, especially in cases where it has spaces of discretion in its decisions, can never move away from the fence of excess.

It should not be forgotten that decisions of the public authorities, especially those based on the precautionary principle, must be reasoned and justified, expressly analyzing the likelihood of serious and irreversible risks arising from anthropic activities. It is inadmissible a decision, whether administrative or judicial, based only on faulty claims that have its causation hypothesis established by way of deduction. Analyzes flirting with the abstract and proposing long-term anticipation exercises are related to the principle of responsibility, not to the precautionary principle.

In compliance with the democratic principle, restrictions on activities and technologies based on the precautionary principle should be

periodically evaluated . The analysis of risks to the environment should not lead to an immutable and definitive decision. Scientific discoveries take on the mantle of transience.

It is concluded that all grounds of validity of discretionary options should be observed in administrative or judicial decisions that have the precautionary principle as a nuclear basis, under penalty of promoting legal uncertainty and subjectivity of decisions and eliciting internal and external control in the competent spheres.

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