LEGAL STATUS OF PRECAUTIONARY PRINCIPLE IN ENVIRONMENTAL JURISPRUDENCE

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Mankind faces overwhelming environmental problems. These are large scale, long term and strike directly at the most intimate links of mankind with the biosphere which is a thin shell of life- about five miles thick- covering the planet like skin of an apple. The tragedy is that we are ourselves responsible for the environmental catastrophe. Mankind is performing deadly experiment by spewing noxious gases like carbon monoxide, carbon dioxide, sulfur oxides, nitrogen oxides, chlorine, chloroform, chloroflourocarbons, methane etc. in the environmental test tube which has resulted in globally pervasive environmental problems like acid rain, global warming, depletion of ozone layer, deforestation, loss of biodiversity and marine pollution. The problem of environmental pollution is assuming alarming proportions and if legal brakes are not applied, the life form on the planet might struggle for survival.

The understanding of the causes and remedies of environmental problems involves scientific and technical specialization. Unfortunately, scientific theories are uncertain and differ widely in coming to grips with the environmental problems.

I. Assimilative Capacity Principle

Assimilative capacity principle underlies earlier legal measures to protect the environment. In 1972 U.N. Conference on Human Environment was held at Stockholm which resulted in adoption of Stockholm Declaration containing a number of principles. Principle 6 of the Stockholm Declaration contains assimilative capacity principle which assumes that science could provide policy makers with the information and means necessary to avoid encroaching upon the capacity of the environment to assimilate impacts and it presumes that relevant technical expertise would be available when environmental harm is predicted and there would be sufficient time to act in order to avoid such harm.

The assimilative capacity principle is based on the belief that scientific theories are certain and adequate to provide the remedies for ecological

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restoration whenever environmental pollution occurs. The principle is built on the foundation of scientific certainties and adequacies.

Assimilative capacity principle suffered setback when the inadequacies and uncertainties of science became visible in environmental context. It has been revealed that inadequacies of science result from identification of adverse effects of a hazard and then working backwards to find causes.[1] Secondly, clinical tests are performed, particularly where toxins are involved, on animals and not humans, that is to say, are based on animals studies or short term cell testing.[2] Thirdly, conclusions based on epidemiological studies are flawed by the scientist's inability to control or accurately assess past exposure of the subjects.[3] Moreover, these studies do not permit the scientist to isolate the effects of the substance of concern. The latency period of many carcinogens and other toxins exacerbates problems of later interpretation. The timing between exposure and observable effect creates intolerable delay before regulation occurs.

Uncertainty, resulting from inadequate data, ignorance and indeterminacy are an inherent part of science.[4] Uncertainty becomes a problem when scientific knowledge is institutionalized in policy making or used as a basis for decision-making by agencies and courts. Scientists may refine, modify or discard variables or models when more information is available. However, agencies and courts must make choices based on existing scientific knowledge. In addition, agency decision making evidence is generally presented in a scientific form that cannot easily be tested and therefore inadequacies in the record due to uncertainty and insufficient knowledge may not bo properly considered.[5]

II. Precautionary Principle

The uncertainty of scientific proof and its changing frontiers from time to time has led to great changes in environmental concepts during the period between the Stockholm Conference of 1972 and the Rio Conference of 1992. A basic shift in the approach to environmental protection occurred initially between 1972 and 1982. Earlier the concept was based on the 'assimilative capacity' rule as revealed from Principle 6 of the Stockholm Declaration of the U.N. Conference on Human Environment of 1972. The

1. Alyson C. Flournay, *Scientific Uncertainty in Protective Environmental Decision Making*, 15 Harvard Environmental Law Review, 1991, 327 at 333-335.
2. *Ibid.*
3. *Ibid.*
4. Brian Wynne, *Uncertainty and Environmental Learning*, 2 Global Environmental Change, 1992 at 111.
5. Charmian Barto, 22 Harvard Environmental Law Review, 1998 at 509.

emphasis shifted to precautionary principle in the 11th principle of the World Charter for Nature adopted on 28 October 1982 by U.N. General Assembly by a majority of 111 votes with 18 abstentions and one negative vote cast by United States. The developing countries overwhelmingly endorsed the Charter. The former pre-1989 Soviet block found the Charter a costless and convenient way to demonstrate the fraternity with the isolation of United States in the General Assembly.

The World Charter for Nature proclaims that activities which are likely to cause irreversible damage to nature shall be avoided.[6] The Charter also comes to grips with the problem of global environmental change by imposing a requirement on States and ultimately their nationals that activities which are likely to pose significant risks to nature shall be preceded by an exhaustive examination. In case where the potential adverse effects of the activities are not fully understood, the activities shall not proceed.[7] In case the activities that may disturb the nature are to be undertaken, such activities shall be planned and carried out so as to minimize potential adverse effects.[8]

The World Charter is not a binding treaty. However, it exerts considerable moral force on accepting States and Member States of the United Nations. Despite the fact that the Charter is not a binding treaty, a large majority of the Member States of the United Nations have supported the Charter. The Charter imposes "soft law" obligations on the States which means that the principles set forth in the present Charter shall be reflected in the law and practice of each state, as well as at the international level.[9]

A. Conceptualisation

Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible environmental damage, lack of scientific certainty should not be used a reason for postponing measures to prevent environmental degradation. The implication of this duty is that the developers must assume from the fact of development activity that harm to environment may occur and that they should take necessary action to prevent that harm. This principle is known as precautionary principle and is recognized in major international documents. It is adopted by United Nations Environment

6. WORLD CHARTER FOR NATURE, 1982, Article 11(a).
7. *Id.*, Article 11(b).
8. *Id.*, Article 11(c).
9. *Id.*, Articles 14 to 24.

Programme and various international conferences on prevention of pollution of the seas, e.g., the Nordic Council's International Conference on Pollution of the Seas, 1989.[10] Article 7 of the Bergen Ministerial Declaration on Sustainable Development in the ECE region held in May 1990 also affirms the precautionary principle.[11] The principle also appears in the Draft Convention for the Conservation and Wise Use of Forests prepared in 1991 by the Centre of International Environmental Law in the following form:

> The precautionary principle means the principle of establishing a duty to take such measure that anticipate, prevent and attack the causes of environmental degradation where there is sufficient evidence to identify a threat of serious or irreversible harm to the environment if there is not yet scientific proof that the environment is being harmed.

The main purpose of the precautionary principle is to ensure that a substance or activity posing a threat to the environment is prevented from adversely affecting the environment, even if there is no conclusive scientific proof linking that particular substance or activity to environmental damage.[12] The words "substance" and "activity" implies substances and activities introduced as a result of human intervention. They allow the principle to be used in relation to all aspects of environmental degradation, and to extend it to the area of sustainability. As a matter of fact, the environmental protection policies must be based on precautionary principle in order to achieve sustainable development.[13]

The Caring for the Earth document emphasizes that precautionary principle be made the basis of decisions on development and environment.[14]

The principle has been given utmost importance in the United Nations Conference on Environment and Development held at Rio in 1992. Although there was scientific uncertainty on various environmental issues, e.g., causes and impact of global warming, framework convention on climate change was concluded. It was unanimously agreed that scientific uncertainty would not be allowed to become an excuse for deferring environmental protection measures. Principle 15 of the Rio Declaration contains precautionary principle which provides as follows :

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10. Cameron and Abouchar, *The Precautionary Principle : A Fundamental Principle of Law and Policy for the Protection of Global Environment*, 14 BOSTEN COLLEGE INTERNATIONAL AND COMPARATIVE LAW REVIEW, 1991 at 1.
11. *Id.* at 18.
12. Gurdip Singh, ENVIRONMENTAL LAW - INTERNATIONAL AND NATIONAL PERSPECTIVES (1985) at 212.
13. *Id.* at 213.
14. CARING FOR THE EARTH (IUCN, UNEP and WWF), 1990 at 16.

> " In order to protect the environment, the precautionary approach shall be widely applied by States accordingly to their capabilities. Where there are threats of serious or irreversible damage, lack of Scientific Certainty shall not be used as reason for postponing cost- effecting measures to prevent environmental degradation."

Inadequacies of science is the real basis that has led to the emergence of precautionary principle. The principle is based on the theory that it is better to err on the side of caution and prevent environmental harm which may indeed become irreversible. While referring to the causes of the emergence of the precautionary principle, Chairman Barto observed :

> " there is nothing to prevent decision makers from assessing the record and concluding that there is inadequate information on which to reach a determination. If it is not possible to make a decision with some confidence, then it makes sense to err on side of caution and prevent activities that may cause serious or irreversible harm. An informed decision can be made at a later stage when additional data is available or resources permit further research."[15]

The precautionary principle forms basis of the adoption of all the instruments at the Rio Conference including the U.N. Convention on Biodiversity which entails legally binding obligations for the States.

B. International Custom

The principle has acquired the status of customary international law after meeting both the essential requirements for the existence of international custom namely, uniform practice of States and *opino juris sive necessitatis*, i.e., the belief of the States that such practice is binding on them. The legal status of the principle as customary norm of international law is not disputed in any quarter.

C. Basis of Precautionary Principle

The origin of precautionary principle lies in the horrifying consequences of environmental pollution. The monster of environmental pollution is spreading its wings so dangerously that the survival of life form on the pianet earth is threatened. The tragedy is that man himself is responsible for expanding the wings of the polluting monster. So pressing is the need for environmental protection and improvement that right to pollution free and healthy environment has emerged as a human right in human rights jurisprudence. The human rights jurisprudence affirms right to decent

15. Charmian Barto, *supra* n. 5 at 547.

environment as an integral part of right to life which is recognized as a basic human right in the Universal Declaration of Human Rights of 1948 as well as International Covenant on Civil and Political Rights of 1966. The International Covenant on Civil and Political Rights loudly proclaims that human right to life is part of international custom which prohibits arbitrary deprivation of right to life. The prohibition against arbitrary deprivation of life is non - derogatory even during the existence of emergency. Thus, human right to decent environment has non-derogatory character and constitutes peremptory norm of International law.

The pivotal position and *jus cogens* character of the right to healthy and pollution free environment in the hierarchy of human rights constitute the genesis for the evolution of the precautionary principle which underlies the adoption of environmental protection measures. The threat of serious and irreversible environmental damage constitutes negation and reversal of human right to decent environment of the present as well as future generations. The mandate of precautionary principle is that environmental protection measures should not be postponed on the ground of conflicting scientific theories and uncertainties in cases involving serious threat of reversal and negation of human right to environment. The *jus cogens* character of the human right to environment constitutes the fundamental basis for the emergence of precautionary principle which underlies international environmental jurisprudence. The position of human right to decent environment is further strengthened in the human rights jurisprudence in view of the fact that human right to decent environment forms part of the third generation human rights which have emerged according to the changing needs of the mankind.

The human right to pollution free environment has triggered the movement for the recognition of right to environment as fundamental right in the Constitution of India. The forty second amendment of the Constitution of India resulted in the introduction of Article 48A as a directive principle of the state policy and Article 51 (g) as a fundamental duty of the citizens. Article 48A proclaims that state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

The directive principle to protect and improve the environment is not merely a policy prescription for the States. It possesses legal status of being complementary to fundamental rights and therefore, imposes an obligation on the Government, including courts, to protect and improve the environment. The right to healthy environment is not expressly recognized as a fundamental right in the Constitution of India. The Indian judiciary jumped out of passive shell, embraced activism, and recognized right to environment

as a fundamental right being an integral and inseparable part of right to life guaranteed in Article 21 of the Constitution. The right to healthy environment constitutes fundamental right and is a constitutional pointer to the states as well as citizens to protect and improve the environment. Thus, environment occupies pivotal constitutional position despite the fact that constitution does not expressly proclaim it as fundamental right.

The pivotal constitutional status of the environment forms the basis for the application of precautionary principle in the adoption of environmental protection measures in India.

III. Sustainable Development

Precautionary principle plays significant role in determining whether developmental process is sustainable or not. Sustainable development is modern fashionable phrase that is freely and frequently used in academic, legal, social, political, scientific, and even business circles. The critics of the phrase aver that it does not offer any precise, succinct and final meaning of universal acceptance. It seems to convey different import to different people. An environmentalist would interpret it as ample heritage for future generations. A legal scholar would describe it as balanced synthesis of environmental and developmental imperatives. An economist would view it as economic growth which can be sustained for generations. A social ecologist would look upon it as sustained use of forests. A businessman who harvests and sells timber may look upon it as sustained projects. In the West, somewhat jocularly, the multinational companies reckon sustainable development as sustained growth or sustained profits. Politicians find their vote bank in the phrase and adopt it in election campaign.

Sustainable development is a process in which development can be sustained for generations. It means improving the quality of human life while at the same time living in harmony with nature and maintaining the carrying capacity of life supporting ecosystem. Development means increasing the society's ability to meet human needs. Economic growth is an important component but cannot be a goal in itself. The real aim must be to improve the quality of human existence to ensure people to enjoy long , healthy and fulfilling lives.

Sustainable development focuses at integration of developmental and environmental imperatives. It modifies the previously unqualified development concept. To be sustainable, development must posses both economic and ecological sustainability. The concept of sustainable development indicates the way in which development planning should be approached.

The principle of sustainable development received impetus with the adoption of Stockholm Declaration in 1972, World Conservation Strategy prepared in 1980 by the World Conservation Union (IUNC) with the advice and assistance from the United Nations Environment Program (UNEP) and the Worldwide Fund, the World Charter of Nature of 1982, Report of the World Commission on Environment and Development (Brundtland Report), *Our Common Future*, of 1987, the document *Caring For Earth : A Strategy for Sustainable Future* developed by the second world conservation project comprised of the representatives of the IUCN, UNEP and Worldwide Fund for Nature. The concept of sustainable development is the foundation stone of the Montreal Protocol for the Protection of Ozone Layer of 1987 and the instruments adopted at the Earth Summit held at Rio in 1992.

The Brundtland Report defines sustainable development as development that meets the needs of present generation without compromising the ability of the future generations to meet their own needs.[16] The report emphasizes that sustainable development means an integration of economics and ecology in decision making at all levels. The document *Caring for the Earth* defines sustainability as a characteristic or state that can be maintained indefinitely whereas development is defined as the increasing capacity to meet human needs and improve the quality of human life.[17] This means that sustainable development would imply improving the quality of human life within the carrying capacity of supporting ecosystem.[18]

Development and ecology are overlapping circles and the terrain of sustainable development is found where they overlap. Development and environment are not antithesis but synthesis of each other. Both are complimentary, inseparable and represent two phases of the same coin. An intrinsic link between environment and development renders sustainability to both.

Precautionary principle underlies sustainable development inasmuch as environmental protection measures are based on the precautionary principle. Therefore, developmental activity must be stopped and prevented if it poses threat of serious and irreversible environmental damage notwithstanding the prevailing scientific uncertainties and conflicting scientific theories. The lack of conclusive scientific proof should not be a

16. World Commission on Environment and Development, OUR COMMON FUTURE, 1987 at 92-93.
17. *Supra* n. 14.
18. Gurdip Singh, *Legal Aspects of Sustainable Development*, 1 NATIONAL CAPITAL LAW JOURNAL, 1996 at 93.

ground for postponing and deferring the imposition of restrictions and regulations on the developmental activity. Sustainable development demands regulation and control of development on the basis of precautionary principle which triggers environmental restraints on development. Precautionary principle forms the foundation of environmental constraints which are built in developmental process. Thus, precautionary principle is an important component of sustainable development because it is linked with the environmental content of sustainable development. The scope of the environmental content of sustainable development is ascertained and determined with reference to precautionary principle which imposes precautionary duties to regulate, control and restraint development in a manner that there is no threat of serious and irreversible environmental damage.

IV. Environmental Impact Assessment (EIA)

Environmental Impact Assessment is a technique to ensure that the likely effects of developmental activity on the environment will be taken into consideration before the developmental activity is authorized to proceed. The technique of Environmental Impact Assessment requires the developer to give to the deciding agency a statement of environmental effects of the development activity to be considered in the decision making process. Environmental Impact Assessment gives a chance to adopt or modify a scheme to mitigate adverse environmental consequences, and for taking the environmental dimension into account in project decisions.

European Community law requires that certain major projects are subject to a process in which the likely environmental effects must be considered before permission is granted for them.[19] As a result, environmental factors are considered as an integral part of the decision making process, rather than as objections to be thought about after a tentative decision has been made. Accordingly, developers have to consider the environmental impact of their projects as part of the process of planning them. The process of Environmental Impact Assessment effectively has three stages[20] :

1. The developer must submit an Environmental Impact Statement to the competent authority. This statement should identify the potential environmental effects (i.e., direct and indirect impacts on the human beings, flora and fauna, soil, water, air, climate and

19. European Community Directive 85/337, Simmon Ball and Stuart Bell, Environmental Law (1991) at 206.
20. Simmon Ball *et al.*, *id.* at 207.

landscape; the interaction between these factors; and the effects on material assets and the cultural heritage) and the steps that are envisaged to avoid, reduce or remedy these effects. It may also include further information, including the alternatives that have been considered.

2. The competent authority must than consult with concerned public bodies, environmental organizations and other institutions concerned with the protection and improvement of the environment. There must also be an opportunity for the public to express opinion. The developer's Environmental Impact Statement must be made publicly available and copies must be sent to consultees.

3. The competent authority must prepare an environmental assessment of the proposal before deciding whether it may go ahead. The Environmental Impact Assessment prepared by the competent authority should take into account the views of the public and consultees.

The following issues arise : whether EIA should be mandatory for all developmental activities ; whether EIA should be mandatory only for major developmental activities involving threat of serious and irreversible environmental damage ; whether competent authorities should be given wide discretion to determine whether developmental activity is likely to have significant adverse environmental effects.

The EC Directive makes Environmental Impact Assessment mandatory for major developmental activities contained in Annex I which are oil refineries; large thermal power stations ; nuclear power stations and nuclear reactors; installations for the storage or disposal of radioactive waste; iron and steel works; installations extracting or processing asbestos; integrated chemical installations; motorways, express roads, airports, and long distant railways, trading ports and inland waterways; and waste disposal installations for the incineration, chemical treatment or landfill of toxic and dangerous wastes.[21] The Directive further provides that other projects require Environmental Impact Assessment where these are likely to have significant effects on the environment by virtue of their nature, size or location. A broad range of projects is covered by this requirement, including most industrial and waste treatment processes, extractive operations, agricultural and forestry developments, and infrastructure projects.[22]

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21. *Ibid.*
22. *Ibid.*

The technique of Environmental Impact Assessment finds origin in the precautionary principle which requires refusal of consent or approval of the developmental activity by the competent authority if such project poses threat of serious and irreversible environmental damage. To determine the serious and irreversible nature of the environmental effects of the development activity, Environmental Impact Assessment is necessary. The precautionary principle mandates that Environmental Impact Assessment should be made obligatory for developmental activities which are likely to have significant adverse effect on the environment. In case Environmental Impact Assessment reveals that the developmental activity poses threat of serious and irreversible environmental damage, the competent authority must withhold the consent for approval or permit for such activity.

The precautionary principle dictates that Environmental Impact Assessment should be carried out not only at the time of commencement of the developmental project but even during the operation of the project. Environmental Impact Assessment involves continuing assessment and evaluation of the environmental effects of the development projects as long as the project is in operation and is not confined to pre-project evaluation of possible environmental effects. Environmental Impact Assessment is a continual process and is focussed at continuing monitoring of the environmental consequences of the developmental activity because it is not possible to anticipate all the environmental consequences of the developmental activity at the time of its commencement. The precautionary principle insists at continuing features of Environmental Impact Assessment as long as developmental activity continues. The continual environmental assessment is the mandate of precautionary principle.

V. Environmental Audit

Environmental audit means self-assessment of the environmental performance of the developer. It is a concept which enables developers to produce environmental strategies after reviewing their environmental performance, i.e. whether there has been compliance with legal and fiscal environmental regulations, conformity to developers environmental policies, what reductions in wastes have been brought about, and what efficiency has been achieved in the use of energy and raw materials.[23] The precautionary principle is applicable as part of the audit system.

Environmental audit is a continual process and involves reviewing both the organization and management in relation to environmental performance, following a systematic examination of operations in an environmental

23. David Hughes, Environmental Law (1992) at 22.

context, considering emissions, effects on local communities, landscapes and ecosystems, and resulting in reports on areas for improved performance.[24] Like Environmental Impact Assessment, continuity is basic feature of environmental audit which is based on principle of caution and embodies the obligation of continuing watchfulness and anticipation.

The concept of environmental audit has two levels, namely, self-assessment of the environmental effects of the activities and external verification of the audit by an independent body. The continual nature of the concept requires that developers must draw up annual environmental statement which shall be audited by independent auditors. The concerned environmental authorities and the public must have an access to the reports of the environmental auditors. To implement precautionary principle which strengthens the edges of environmental jurisprudence, environmental audit must be made mandatory at the international as well as at national levels.

VI. Response of Indian Judiciary

A. Status of Precautionary Principle in India

The uncertainties of scientific proof and its changing frontiers from time to time has led to great changes in environmental concepts during the period between the Stockholm Conference of 1972 and the Rio Conference of 1992. In *Vellore Citizens Welfare Forum* v. *Union of India*,[25] the Supreme Court of India referred to these changes, to the precautionary principle and the new concept of burden of proof in environmental matters. Justice Kuldip Singh referred to the environmental principles of the international environmental law and stated that precautionary principle, the polluter pays principle and the special concept of onus of proof have now merged and govern the law in our country as is clear from Articles 47, 48A and 51A(g) of the Constitution and that, in fact, in various environmental statutes, such as Water Act, 1974, the Environment (Protection) Act, 1986 and other statutes, these concepts are already implied. In view of the constitutional and statutory provisions, the Supreme Court held that the precautionary principle and polluter pays principle are part of environmental law in India. The Supreme Court further held that even otherwise precautionary principle and polluter pays principle are part of the customary international law and, therefore, part of Indian domestic law.

In *Vellore* Case, the Supreme Court not only treated precautionary principle and polluter pays principle as part of the Indian environmental law but also directed the Central Government to establish authority under

24. *Ibid.*
25. (1996) 5 SCC 647.

section 3 (3) of Environment (Protection) Act, 1986. The authority established by the Central Government under section 3(3) of the Environment (Protection) Act, 1986 shall implement precautionary principle and polluter pays principle. Justice Kuldip Singh criticized the inaction on the part of the Government of India in the appointment of an authority under section 3(3) of the Environment (Protection) Act and observed that the Central Government should constitute an authority headed by a retired judge of the High Court and other members preferably with expertise in the field of pollution control and environment protection.[26]

The Government of India has issued certain notifications pursuant to the observation of the Supreme Court in *Vellore* Case. In 1996, Government of India issued a notification for the establishment of authority for the State of Tamil Nadu under section 3(3) of the 1986 Act which shall consist of a retired High Court Judge and other technical members.[27] A similar notification was issued in 1997 for Environmental Impact Assessment for the NCT.[28] The said notification issued under section 3(3) of the 1986 Act deals with the shrimp industry and includes a retired High Court Judge and technical members.

In *A.P. Pollution Control Board* v. *M.V. Nayudu*[29] the Supreme Court affirmed that the precautionary principle is part of Indian environmental law. The case involves the grant of consent by A.P. Pollution Control Board for setting up an industry by the respondent company for the manufacture of hydrogenated castor oil. The categorization of industries into red, green and orange has been made and the respondent industry was included in the red category. The company applied to the A.P Pollution Control Board seeking clearance to set up the unit under section 25 of the Water Act. The Board rejected the application for consent on the ground that the unit was polluting unit and would result in the discharge of solid waste containing nickel, a heavy metal and also hazardous waste under Hazardous Waste (Management and Handling) Rules, 1989. The respondent company appealed under section 28 of the Water Act to the appellate authority. The appellate authority decided that the respondent industry was not a polluting industry and directed A.P Pollution Control Board to give its consent for the establishment of the respondent industry on such conditions as the Board may deem fit. In a writ petition filed in the High Court, the division bench of the High Court directed A.P Pollution

26. *Id.* at 647.
27. Notification S.O. 671 (E) dated 30 September 1996.
28. Notification No. 88 E dated 6 February 1997.
29. AIR 1999 SC 512.

Control Board to grant consent subject to such conditions as might be imposed by the Board. It is against the said judgement of the High Court that A.P Pollution Control Board filed various appeals in the Supreme Court. The Supreme Court discussed the evolution of precautionary principle and explained the meaning of precautionary principle in detail.

The Supreme Court expressed approval of the *Vellore* judgment and treated precautionary principle as part of Indian environmental law.

The judgment of the Supreme Court in *Vellore* case and *A P Pollution Control Board* case have significant impact on the specialized environmental legislations in India . The judgments are a pointer for Pollution Control Board to grant consent for setting up an industrial unit on the basis of precautionary principle. The precautionary principle underlies the provisions of environmental legislations which relate to grant of consent by the Pollution Control Board to the setting up of industrial units.

B. Burden of Proof

The inadequacies of science have led to emergence of precautionary principle and the precautionary principle has led to the special principle of burden of proof in environmental cases. The special burden of proof places onus of proof on the actor or developer/industrialist to show that his action is environmentally benign. This is often termed as a reversal of the burden of proof, because otherwise in environmental cases, those opposing the change would be compelled to shoulder the evidentiary burden, a procedure which is not fair. Therefore, it is necessary that the party attempting to preserve the *status quo* by maintaining a less polluted state should not carry the burden of proof and the party who wants to alter it must carry this burden.[30]

In the *Vellore* case and *A.P Pollution Control* case, the Supreme Court observed that the new concept which places burden of proof on the developer or industrialist who is proposing to alter the *status quo*, has become a part of environmental law in India. The court directed the environmental authorities to recognize the shift in burden of proof in environmental cases created by precautionary principle.

The precautionary principle suggests that where there is an identifiable risk of serious or irreversible harm, including, for example, extinction of species, widespread toxic pollution etc., it may be appropriate to place the burden of proof on the person or entity proposing the activity that is potentially harmful to the environment.

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30. James M. Olson, *Shifting the Burden of Proof*, 20 ENVIRONMENTAL LAW, 1990, 891 at 898.

C. Combination of Judicial and Scientific Needs

The application of precautionary principle in environmental cases involves combination of judicial and scientific needs. In the absence of scientific and technological inputs, the judiciary is environmentally myopic.

(a) Environmental Courts

The need for combination of scientific and judicial inputs has crystallized the necessity for the establishment of environmental courts. The officers drawn from the Executive or the judges alone are not suitable for resolving the complicated disputes concerning environment. In 1986, Justice Bhagwati projected the need for the establishment of specialized environmental courts in *M.C. Mehta* v. *Union of India.*[31] The Supreme Court noticed that in past few years there is an increasing trend in the number of cases based on environmental pollution and ecological destruction coming up before the courts. Many such cases concerning the material basis of livelihood of millions of poor people are reaching the Supreme Court by way of public interest litigation. In most of these cases, there is need for scientific expertise as an essential input to inform judicial decision making. These cases require expertise at a higher level of scientific and technical sophistication. The Court felt the need for such expertise in these cases and it had to appoint several expert committees to inform the court as to what measures were required to be adopted by the management of the Shriram Foods and Fertilizers to safeguard against the hazard or possibility of leak, explosion, pollution of air and water etc. The Court had great difficulty in finding out independent experts who would be able to advise the Court on these issues. Since there is at present no independent and competent machinery to generate, gather and make available the necessary scientific and technical information , the Court had to make an effort on its own to identify experts who would provide reliable scientific and technical input necessary for the decision of the case and this was obviously a difficult and by its very nature, unsatisfactory exercise. It is, therefore, absolutely essential that there should be an independent center with professionally competent and public spirited experts to provide the needed scientific and technological inputs. The Court, therefore, urged the Government of India to set up an Ecological Science Research Group consisting of independent, professionally competent experts in different branches of science and technology, who would act as an information bank for the court and generate new information according to the particular requirements of the case. The Court also suggested the Government of India that since cases

31. AIR 1987 SC 965 at 982.

involving issues of environmental pollution, ecological destruction and conflicts over natural resources are increasingly coming up for adjudication and these cases involve assessment and evaluation of scientific and technical data, it might be desirable to set Environmental Courts on a regional basis with one professional judge and two experts drawn from the Ecological Science Research Group keeping in view the nature of the case and the expertise required for its adjudication. There would of course be a right of the appeal to the Supreme Court from the decision of the environmental court. Thus, the Supreme Court not only contemplated combination of a judge and technical experts but also an appeal to the Supreme Court from the environmental court.

The Supreme Court again expressed the need for the establishment of environmental courts consisting of judicial and scientific experts in *A.P Pollution Control Board* v. *M. V Nayudu*[32] and suggested amendments in environmental statutes.

(b) Environmental Statutes — Need for Amendments

The combination of judicial and scientific needs require the amendments in the environmental statutes. The Supreme Court urged the Government of India to bring about appropriate amendments in the environmental statutes to ensure that in all environmental courts, tribunals and appellate authorities, there is always a judge of the rank of a High Court judge - sitting or retired - and scientist or group of scientists so as to help a proper and fair adjudication of disputes relating to environment and pollution.[33] The Supreme Court felt an immediate need that in all states and union territories, the appellate authorities under Water (Prevention and Control of Pollution) Act, 1974 and section 31 of Air (Prevention and Control of Pollution) Act, 1981 or other rules, there is always a judge of High Court, sitting or retired, and a scientist or group of scientists of high ranking and experience, to help in the adjudication of disputes relating to environment and pollution.[34] The Supreme Court pointed out the need of amending notifications under these Acts as well as notification under Rule 12 of the Hazardous Wastes (Management and Handling) Rules, 1989[35]. The Supreme Court requested the Central and State Government to take appropriate action urgently.[36]

The National Environmental Appellate Authority Act, 1997 comes very close to the ideals set by the Supreme Court. The Act provides for the

32. AIR 1999 SC 812 at 822-23.
33. *Ibid.*
34. *Ibid.*
35. *Ibid.*
36. *Ibid.*

establishment of Appellate Authority consisting of a sitting or retired Supreme Court Judge or a sitting or retired Chief Justice of High Court and a vice-chairman who has been an administrator of high rank with expertise in technical aspects of problems relating to environment and technical members not exceeding three who have professional knowledge or practical experience in the areas pertaining to conservation, environmental management, land or planning and development. Appeals to the appellate authority are to be preferred by persons aggrieved by an order granting environmental clearance in the areas in which any industries, operations or processes etc. are to be carried subject to safeguards. With a view to ensure that there is neither danger to environment nor to ecology and at the same time ensuring sustainable development, the Supreme Court expressed the view that the Supreme Court, being the apex court, and the High Courts should refer scientific and technical aspect for investigation and opinion to expert bodies such as the Appellate Authority under the National Environmental Appellate Authority Act, 1997[37]. The said Authority, being combination of judicial and technical inputs, possesses expertise to give adequate help to the Supreme Court and High Courts to arrive at decisions in environmental matters. Accordingly, the Supreme Court in *A.P Pollution Control Board* v. *M.V Nayudu* referred the issue of determination of the hazardous nature of the respondent industry to the Appellate Authority which would help the Supreme Court to decide the matter of environmental clearance to the respondent industry.[38]

VII. Conclusion

The shift from assimilative capacity principle to precautionary principle has considerably sharpened the edges of environmental jurisprudence. The precautionary principle occupies such a central and pivotal position in the environmental jurisprudence that it underlies the international conventions, treaties and protocols adopted to protect the environment. Despite uncertainties and conflicting scientific theories concerning causes of the depletion of ozone layer, international community of sovereign States adopted Montreal Protocol to prevent the depletion of ozone layer which aims at phasing out of ozone depletion substances like Chlorofluoro carbons and halons. Despite scientific uncertainties concerning causes and effects of global warming, Climate Change Convention was adopted at the U.N. Conference on Environment and Development in 1992. Despite uncertainties concerning conservation of biodiversity, U.N. Convention on Biodiversity was adopted at the U.N. Conference on Environment and Development.

37. *Id.* at 825.
38. *Ibid.*

The issue of biosafety has always posed problems due to scientific inadequacies and uncertainties. The Conference of the Parties to the Convention on Biological Diversity adopted a supplementary agreement to the Convention known as the Cartagena Protocol on Biosafety on 29 January 2000. The Protocol seeks to protect the biological diversity from the potential risk posed by living modified organisms resulting from modern biotechnology. It establishes a procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory. The Biosafety Protocol is breakthrough in that it enshrines the " precautionary principle" as a principle of international environmental law. The Protocol establishes a Biosafety Clearing - House to facilitate the exchange of information on living modified organisms and to assist countries in the implementation of the Protocol.

The precautionary principle has so consistently been affirmed in the international conferences and the legal instruments adopted therein that it has acquired the character of customary international law. The Supreme Court of India has demonstrated exemplary judicial activism in treating the principle not only as part of international custom but domestic law in India as well.

The precautionary principle forms the basis of fundamental principles of international environmental law, namely, Environmental Impact Assessment, Environmental Audit and Sustainable Development. However, Environmental legislations in India do not contain adequate provisions to give expression to the obligations to carry out environmental impact assessment and environmental audit. The environmental statutes in India need appropriate amendments to operationalise and implement basic and fundamental concepts of international environmental jurisprudence.