

RIVER POLLUTION IN INDIA: MENACING PROPORTIONS AND THE JUDICIAL CRAFTMANSHIP

Prashant Agarwal

Advocate, Supreme Court of India,
New Delhi (India)

ABSTRACT:

Rivers play an important role in the sustenance of life. They provide us with the basic necessity for survival on this planet. Humans rely on rivers not only for drinking water but also for agriculture, transportation, energy production, industrial processes, water disposal and the extraction of fish and other products. Water being the best and convenient dilution medium is the worst affected resource by pollution. The large scale contamination of water sources at present is an inevitable outcome of heavy industrialization and urbanization. In India hardly 10-12% people get clean drinking water, 80% quench their thirst from polluted water and the rest are left with no source. The country's waterways have suffered badly in the recent years with vast quantities of municipal and industrial waste discharged into them every day. There seem no signs of improvement in the state of Indian rivers as the number of rivers defined as polluted has risen from 121 to 275 in the last five years. There is a need to specifically take into account prevention and control of water pollution as well as ecological restoration of degraded water bodies in the policies on water pollution. Enforceable water quality standards should be established and penalties need to be levied for violations of water quality standards.

I. INTRODUCTION:

“The earth has enough for everyone's need but not for anyone's greed” – Mahatma Gandhi.

Water is considered to be the source of life. It covers about 70 percent of the Earth but only a small portion of this natural resource is fit for human consumption. Large fraction of about 97 percent of the water is stored in the oceans but it is not safe for human consumption. The rest 3 percent is stored in the form of rivers, lakes and underground water.

Water pollution may be termed as “the undesirable adverse change in the composition of water to such an extent that it is unsuitable for the purpose for which it would be suitable in the natural state”. And water pollutant can be defined as a physical, chemical or biological factor causing aesthetic or detrimental effects on aquatic life and on those who consume water.

Rivers play a vital role in development of nations and sustenance of life. Humans rely on fresh water systems not only for drinking water but also for agriculture, transportation, energy production, industrial processes, water disposal and the extraction of fish and other products. As a result human settlements worldwide are concentrated near fresh water ecosystems, with over half of the world's population living within 20 km of a perennial river. However these fresh water ecosystems all over the world are now threatened not only by over exploitation and poor management but also because of rising environmental pollution, dumping of industrial effluent, run-off from agricultural fields and increasing use of synthetic organic substances.

River pollution has been causing some serious waterborne diseases and health problems affecting human population and also the availability of fresh potable water in the country. It also results in loss of tourism as well as animals, fish, and birds in the environment. We have not been able to maintain their purity, cleanliness and the physical wellbeing. There is not even a single river which is free from pollution.

II. EXTENT OF THE PROBLEM: THE MENACING PROPORTIONS:

India is a country which has rich history, not only of social and economic prosperity but also of environmental richness. It is also referred to as the “Land of Rivers”. India has 14 major, 55 minor and

numerous small rivers. In fact river banks first hosted human civilizations in India as elsewhere in the world. Rivers in India play important social and economic roles. This is the reason why Indians worship rivers as god and goddesses. Indian mythologies are full of stories glorifying the rivers. But in spite of this profound respect and reverence for our rivers even the most prestigious and sacred rivers of India have been facing the curse of pollution for a long time. A recent assessment by the Central Pollution Control Board (CPCB) says that the number of rivers defined as 'polluted' in India has risen from 121 to 275 in the last five years, with increased levels of sewage a primary cause.

In India hardly 10-12% people get clean drinking water, 80% quench their thirst from polluted water and the rest are left with no source. The country's waterways have suffered badly in the recent years with vast quantities of municipal and industrial waste discharged into them every day. Indian cities produce nearly 40,000 million litres of sewage every day and barely 20 percent of it is treated and the rest eighty percent is untreated which flows directly into the nation's rivers, polluting the main sources of drinking water. The situation becomes even worse when this water from rivers seeps into groundwater, thereby creating a ticking health bomb in India.

A survey released last year by the World Health Organization (WHO) found that Delhi, the Indian capital, was the most polluted city on the planet, with an annual average of 153 micrograms of the most dangerous small particulates, known as PM 2.5, per cubic meter. The level was six times the WHO's recommended maximum, 12 times US standards and more than twice the level considered safe by Indian authorities. In all, 13 of the world's 20 most-polluted cities were in India, according to the WHO.

There are several sources of river water pollution in India which work together to reduce the overall quality of the water. The main sources of river pollution and their effects include:

- i. Industrial Pollution – Industrial wastes discharged are highly toxic and mainly composed of various chemicals which are difficult to clean up. The industrial sludge contains high levels of arsenic, mercury, lead and cadmium. These metals find their way to drinking bodies through industrial wastes and when such water is consumed it causes damages and disorders in organisms. These metals get increasingly deposited in the body of organisms at higher trophic levels and the phenomenon is called Bio magnification.
- ii. Sewage and other Organic Wastes – Domestic sewage including human and animal excreta are also discharged into the river water. These wastes when discharged into water leads to the growth of bacteria. These bacteria decompose the water by utilizing the oxygen present in it and thus cause the depletion of oxygen concentration in water. This oxygen deficient water becomes unsuitable for the aquatic animals to live in it. This polluted water also contains germs of diseases like typhoid, cholera, diarrhea, jaundice and hepatitis.
- iii. Agricultural Runoff – The extensively used fertilizers and chemicals in agricultural fields are washed away by the flowing water and thus carried by the latter to other water bodies to pollute them. This contaminated water causes health hazards to aquatic animals as well as to livestock, animals and human beings. The organophosphates and the carbonates present in pesticides affect and damage the nervous system and can even cause cancer.
- iv. Radioactive and Thermal Wastes – Radioactive wastes from nuclear reactors and thermal wastes in water from electricity generation plants, steel plants and oil refineries when discharged into the rivers causes rise in temperature of these water bodies and thereby depleting the oxygen concentrations in water. The low level of oxygen affects the life of aquatic animals. When birds and other animals come in contact with this contaminated water their organs become paralyzed.
- v. Religious and Social Practices - Religious and social practices also contribute to river pollution. Dead bodies are cremated on the river banks and partially burnt bodies are also flung into the river as a matter of religious faith. As a matter of religious practice, it is now common to see people immersing offerings in plastic bags which are very dangerous and further add to the pollution load of the river. Studies have revealed that the biochemical oxygen demand (BOD) goes up drastically when thousands of people simultaneously take a 'holy dip' during religious festivals.

III. LEGAL AND REGULATORY INSTRUMENTS:**A. LEGISLATIONS:**

India is a signatory to practically all the international conventions and conferences on environment. The Stockholm Conference on Human Environment represented by 113 world governments was addressed among others, by Indian Prime Minister (Late) Smt. Indira Gandhi. The need for joint action was envisaged by all the nations participated in the convention. To give impetus to the resolutions passed by the world bodies; Government of India also took an initiative in this regard and within two years of Stockholm Declaration of 1972, The Water (Prevention and Control of Pollution) Act, 1974 was passed.

The acts that directly concern water pollution in India are:

- i. Water (Prevention and Control of Pollution) Act, 1974 - This is one of the most important central legislation concerning water resources. The aim of the Water Act is to restore wholesomeness of water and to ensure that domestic and industrial effluents are not discharged into watercourses without adequate treatment.
- ii. Water (Prevention and Control of Pollution) Cess Act, 1977 – This act provides for the levy and collection of cess/fees on water consuming industries and local authorities.
- iii. Water (Prevention and Control of Pollution) Cess Rules, 1978 – These rules contain the standard definitions and indicate the kind of and location of meters that every consumer of water is required to affix.
- iv. Environment (Protection) Act, 1986 - This Act extends to water quality and the control of water pollution. Sec. 2(a) of the Act defines environment to include water and the interrelationship which exists among and between water and human beings, other living creatures, plants, micro-organisms and property. The Act authorizes the Central Government to establish standards for the quality of the environment and for emissions of discharge of environmental pollutants from any source.
- v. Indian Easements Act, 1882 - This Act recognizes the right of a riparian owner to unpolluted waters. A riparian owner is the person who owns the land adjoining a river or water stream. He has a right to use the water of the stream which flows past his land equally with other riparian owners and to have the water come to him undiminished in flow, quantity and quality and to go beyond his land without obstruction.

B. POLICIES:

National Water Policy is formulated by the Ministry of Water Resources, Government of India. The policy aims to govern the planning and development of water resources and their optimum utilization.

The first National Water Policy was adopted in the year 1987. It was reviewed and updated in 2002 and later in 2012.

1. National Water Policy, 1987 was formulated keeping in view the National perspectives. The policy recommended for the establishment of appropriate organizations for the planned development and management of a river basin as a whole. Drinking water was accorded highest priority followed by irrigation, hydro-power, navigation, industries, etc. There was no specific mention for the environmental flow in rivers except providing for the preservation of the quality of environment and the ecological balance.
2. National Water Policy, 2002 was also formulated keeping in view the National perspectives. The policy recommended for the establishment of appropriate river basin organizations for the planned development and management of a river basin as a whole or sub-basins, wherever necessary. As regards the environmental flow of rivers it stated that minimum flow should be ensured in the perennial streams for maintaining ecology and social considerations.
3. National Water Policy, 2012 was formulated keeping in view the integrated perspective considering local, regional, state and national context. The policy recommended that there is a need for comprehensive legislation for optimum development of inter-State rivers and river valleys and to enable establishment of basin authorities with appropriate powers to plan, manage and regulate utilization of water resource in the basins. As regards the environmental flow of rivers it stated that a

portion of river flows should be kept aside to meet ecological needs ensuring that the proportional low and high flow releases correspond in time closely to the natural flow regime.

C. ENVIRONMENTAL IMPACT ASSESSMENT (EIA):

The techniques of EIA have been evolved in developed countries, which have become essential tools for planning and management of riverine environment. In India the environmental impact assessment for projects is outlined in the Environmental Impact Assessment Notification, 2006. The procedure is primarily divided into four stages, i.e. screening, scoping, public consultation and appraisal. Any serious procedural lapse can lead to questioning of the entire process for granting an environmental clearance.

The National Green Tribunal in *Krishi Vigyan Arogya Sanstha and Ors. v. MoEF and Ors.*, Dated: 20 September 2011, observed that “grant of environmental clearance is basically a procedural law and any procedural lapses such as collection and evaluation of basic data which may lead to threat to the environment, ecology and conservation of natural resources, shall have to be taken seriously by this tribunal while dealing with disputes coming before it”.

D. ENVIRONMENTAL AUDITING:

Environmental Auditing in India is conducted by Supreme Audit Institution (SAI) for the past 25 years. SAI is headed by Comptroller and Auditor General (CAG) of India. This process was formalized with the introduction of specialized MSO (Audit), 2002 guidelines for conduct of environmental audits. The institution assists Ministry of Environment and Forests in preparing policy for the effective management of Waste. As representative of SAI India, Principal Director (Scientific Departments) is a member of a committee which will evolve policy and strategy for the better management of waste in India based on the recommendations made by SAI India in its Audit Report on “Management of Waste in India”.

IV. LANDMARK JUDGEMENTS: THE JUDICIAL CRAFTMANSHIP:

The right to ‘pollution free water’ and the right of access to ‘safe drinking water’ has been read as a part of ‘Right to Life’ under Art. 21 of the Constitution of India. This has been possible because of a liberal and activist interpretation of the fundamental right to life by the Supreme Court as well as the High Courts of the country in series of cases before them. After initially talking about the right to water in the context of pollution cases, courts have delivered a growing body of verdicts on the more fundamental concerns of access to drinking water and on the right to safe drinking water as a fundamental right.

In *Municipal Council, Ratlam v. Vardhichand*, 1981 SCR (1) 97, the Supreme Court identified the responsibilities of local bodies towards protection of environment and developed the law of Public Nuisance in Criminal Procedure as a potent instrument for the enforcement of their duties.

While commenting on the importance of environmental protection Hon’ble Justice Krishna Ayer, Supreme Court of India, once said “Today the state and the citizen are under a fundamental obligation to protect and improve the environment including forests, lakes, rivers, wildlife and to have compassion for living creatures”. He stressed the need of jurisprudence and that is “Jurisprudence of Environmental Protection”.

In *Delhi Bottling Co. Pvt. Ltd. v. Central Board for the Prevention and Control of Water Pollution*, AIR 1986 DEL. 152, the company failed to comply with the orders of the Board and continue to pollute the nearby river, the Board successfully obtained an injunction u/s 33(1) of the Water (Prevention and Control of Pollution) Act, 1974 and restrained the company from doing so.

In *M.C. Mehta v. Union of India*, AIR (1987) 4 SCC 463, (Kanpur Tanneries Case) a public interest litigation was filed in relation to the pollution of the river water, specially the pollution caused by the tanneries at Jajmau (Kanpur). The court pointed out that water is the most important of the elements of nature and river valleys have been the cradles of civilization from the beginning of the world. It is a popular belief that the river Ganga is the purifier of all but we are now led to the situation that action has to be taken to prevent the pollution of the water of the river Ganga since we have reached to a stage where any further pollution of the river water is likely to lead to a catastrophe.

The Court was of the view that the effluent discharged from a tannery is ten times more noxious when compared with the domestic sewage water that flows into the river from any urban area on its banks. The Court directed the closure of those tanneries which had failed to take minimum steps required for the primary treatment of industrial effluent. Tanneries having primary treatment plants were allowed to carry on production subject to the condition that they should continue to keep the primary treatment plants established by them in sound working order. The court adjourned for the next date of hearing with the direction that the case in respect of the municipal bodies and the industries which were responsible for the pollution of water in the river Ganga would be taken up for consideration.

Accordingly, the case against municipal bodies was considered by the Court in *M.C. Mehta v. Union of India*, AIR 1988 SC 1115, (Ganga Pollution/Municipalities Case) where the court took up the case of Kanpur Nagar Mahapalika, since it was found that Kanpur was one of the biggest cities on the banks of the river Ganga. The Kanpur Nagar Mahapalika was asked by the Court to prevent pollution of water accumulated at the dairies. It was submitted before the Court that whenever the Board constituted under the Water Act initiates any proceedings to prosecute industrialists or other persons who pollute water in the river, the persons accused of the offences immediately obtain stay orders from the High Court, thus frustrating the attempt of the board to enforce the provision of water Act. The Court expressed its view on this issue as under:

Since the problem of pollution of the water in the river Ganga has become very acute the High Courts should not ordinarily grant orders of stay of criminal proceeding in such cases and even if such order of stay is made in any extraordinary case the High Court should dispose off the case within a short period, say about two months, from the date of the institution of such case. We request the High Courts to take up for hearing all the cases where such orders have been issued under Section 482 of the Code of Criminal Procedure, 1973 staying prosecutions under the Water Act within two months.

In *L.K. Koolwal v. State of Rajasthan*, AIR 1988 RAJ. 2, the Rajasthan High Court gave directions to clean the city of Jaipur and save it from its unhygienic conditions. The court in this case invoked Art. 51A (g) of the Constitution and was of the view that though this provision is a Fundamental Duty, it gives citizens a right to approach the Court for a direction to the municipal authorities to clean the city and that maintenance of health, sanitation and environment falls within Art. 21, thus giving citizens the fundamental right to ask for affirmative action.

The Court in this case has made an important point that when every citizen owes a constitutional duty to protect the environment (Art. 51A), the citizen must also be entitled to enlist the court's aid in enforcing that duty against the recalcitrant state agencies.

Another noteworthy contribution in the Koolwal's judgment is the court's elaboration of Art. 19(1) (a) to include the 'Right to Know'. In this case, the court extends the right to know to entitle the petitioner to full information about the municipality's sanitation programme or the lack thereof.

The Supreme Court itself enlarged the scope of the right to live to explicitly include the right to enjoyment of pollution free water and air for full enjoyment of life in *Subhash Kumar v. State of Bihar*, AIR 1991 SC 420, the court on a review of the facts and the averments contained in the counter affidavits did not accept the petitioner's allegations. However, the court in this matter reiterated the use of Art. 32 as an instrument for safeguarding citizens' fundamental right to life and averred that the right to live under Art. 21 of the Constitution includes the right of enjoyment of pollution free water and air for the full enjoyment of life.

In yet another case of *U.P. Pollution Control Board v. Modi Distillery and Ors.*, 1988 AIR 1128, the Hon'ble Supreme Court went a step further and said where the legal infirmity is of such a nature which can be easily cured then in that case Chairman or Director cannot escape from their liability merely on a hyper technical ground of wrong description of the name of the industrial unit discharging effluents and polluting the river. The court held that the technical flaw of describing the name of the company wrongly could be rectified by amending the complaint but it is no ground for quashing the prosecution against the polluters.

In *Indian Council for Enviro-Legal Action v. Union of India*, AIR 1996 SC 1446, the Supreme Court found that the responsibility for costs of remedying water problems falls on companies in the wrong. The court said, "The damage caused by the untreated highly toxic wastes resulting from the production of 'H' acid and the continued discharge of highly toxic effluents from sulphuric acid plant flowing through the sludges is indescribable. It has inflicted untold miseries upon the villagers and long lasting damage to the soil, to the underground water and to the environment of the area in general." The Supreme Court fixed the responsibility on the errant industry and asked the Central Government to recover the expenses for remedial action from the industry.

In *Vellore Citizens Welfare Forum v. Union of India*, AIR 1996 SC 2715, while dealing with the case pollution caused by enormous discharge of untreated effluent in the State of Tamil Nadu, Supreme Court passed the judgment placing development and environment on same footing explaining that 'The Polluter Pays Principle' and 'Precautionary Principle' are salient features of sustainable development and are implicit under Art. 21, 47, 48A and 51A (g) of the Constitution. The court also issued directions for setting up an authority to deal with polluting industries in the State of Tamil Nadu and directed the Madras High Court to constitute a 'Green Bench' to deal with this case and other environmental matters.

In *M.C. Mehta v. Kamal Nath*, (1997)1 SCC 388, a large area on the bank of the River Beas which is part of the protected forest has been given on a lease by the Himachal Pradesh Government purely for commercial purposes to the Motels. The Supreme Court observed that the Himachal Pradesh Government committed patent breach of public trust by leasing the ecologically fragile land to the Motel Management. The court also declared that the 'Public Trust Doctrine' as developed by the ancient Roman Empire is a part of the law of land and the natural resources which are meant for public use cannot be converted into private partnership.

The National Green Tribunal (NGT) has also played a proactive role in furthering the principles of environmental jurisprudence and taking the concept of judicial activism to new heights.

In *Krishan Kant Singh & Ors. v. National Ganga River Basin Authority & Ors.*, Dated 16 October 2014, the National Green Tribunal while dealing with the case of water pollution in the River Ganga particularly between Garh Mukteshwar and Narora due to discharge of highly toxic and harmful effluents held that, "For restoration and restitution of the degraded and damaged environment and for causing pollution of different water bodies, particularly River Ganga, directly or indirectly, resulting from its business activities carried on for a long period in the past, we direct the Unit to pay a compensation of rupees Five Crores (Rs.5,00,00,000/-) to UPPCB within one month from the date of passing of this order. Such direction is completely substantiated and is based on the Polluter Pays Principle, in the facts and circumstances of the present case."

The Tribunal also directed the unit to carry out the removal of sludge and cleaning of Puldhera drain. If the work of cleaning and removal of sludge in and along the Puldhera drain is not completed within three months by the industry, in that event, it shall be liable to pay a further sum of Rs. 1 Crores, in addition to the amount afore-ordered to UPPCB.

In *Manoj Mishra v. Union of India & Ors.*, Dated: 21 July 2015, the National Green Tribunal decided to setup committee to plan on cleaning up of river Yamuna and ordered the fine of Rs.5000/- be imposed on people who throw religious wastes into the Yamuna. The tribunal also noted that "Experience has shown that authorities charged with the responsibilities lacked the requisite will to execute the orders, plans and schemes seriously and effectively."

Recently dealing with a case of water pollution in river Ganga, the tribunal held that immersion of idols puts a load on the rivers and can defeat revitalization plan of the National Green Tribunal. The agencies concerned have been told to publicize the identified sites of immersion and check the flow of pooja material into the river. The Delhi government has also been asked to provide mobile toilets/ bio-toilets at these sites. The tribunal also directed that immersion would be allowed of only those idols which are made from bio-degradable material and not plastic or Plaster of Paris and only those colors should be used on the idols which are environment-friendly.

V. MITIGATING RIVER POLLUTION - SOME SUGGESTIONS:**A. FORMULATING PLAN OF ACTION:**

To avoid depletion or degradation of riverine environment, careful planning and designing ecologically sound management plan is the only answer. For conserving river water resources a positive and meaningful approach must be followed pertaining to quality and quantity evaluations of all the rivers minor as well as major. The survey should also be a scientific assessment of the needs of various interests like irrigation, navigation, fish culture, industrial, recreational, power generation and domestic needs.

B. PREVENT POLLUTION RATHER THAN TREATING SYMPTOMS OF POLLUTION:

Remedial actions to clean up polluted sites and water bodies are generally much more expensive than applying measures to prevent pollution from occurring. Although wastewater treatment facilities have been installed and improved over the years in many countries, water pollution remains a problem. The most logical approach is to prevent the production of wastes that require treatment. Thus approach to control water pollution shall focus on wastewater minimization, in-plant refinement of raw materials and production processes, recycling of waste products, etc., should be given priority over traditional end-of-pipe treatments.

C. ENCOURAGE PARTICIPATORY APPROACH WITH INVOLVEMENT OF ALL RELEVANT STAKEHOLDERS:

The participatory approach involves raising awareness of the importance of water pollution control among policy makers and the general public. Decisions should be taken with full public consultation and with the involvement of groups affected by the planning and implementation of water control activities. Various methods exist to implement public participation such as interviews, public information sessions and hearings, expert panel hearings and site visits.

Citizen's participation and their efforts could force government to take certain action as was done in CHIPKO Movement in hills of Uttar Pradesh under the leadership of Sundarlal Bahuguna, Narmada Bachao Andolan against construction of Narmada dam and pollution. The Water (Prevention and Control of Pollution) Act, 1974 was enacted, at least partly, due to public pressure.

D. PROMOTE INTERNATIONAL CO-OPERATION ON WATER POLLUTION CONTROL:

Transboundary water pollution typically encountered in large rivers requires international co-operation and co-ordination of efforts in order to be effective. Many watercourse states are already working together to face the challenges and share the benefits from transboundary water cooperation, including, for example, in the Danube, Mekong, Nile, Rhine, and Zambezi basins. And with growing worldwide awareness of the speed and consequences of climate change, there is far greater willingness from governments to cooperate towards addressing those issues.

VI. CONCLUSION:

To sum up, there is no need for more and more legislations. What is more important, on the contrary, is to implement the existing provisions sincerely. There must be an indomitable political will on the part of our government to enforce the laws. Also awareness of laws amongst the masses is a must, otherwise, enforcement of environmental laws cannot be expected from our illiterate and unwary masses.

It must be realized that environment is not the problem of the government; it is the problem of the people. The concept of environment was not conceptualized by some decision maker or some bureaucrat or some administrator of some politician. It was, is and will remain the concept of the people, Therefore we should try to create mass awareness by writing, advocating, lobbying, raising questions in Parliament and other places. By creating a climate of environmental consciousness, we can influence people's approach to the problem and thereby rectify the legislations by means of mass approval. Thus the combined efforts of the people, Non-Governmental Organizations and the government alone can ensure a better state of

Indian rivers. Human being has to make up his mind not to exploit environment for his short term luxuries. But he has to develop benign perspective towards nature as he is solely dependent on it.

REFERENCES:

1. Abraham C, Environmental Jurisprudence in India (Kluwer Law International 1999).
2. Asthana V and Shukla A, Water Security in India: Hope, Despair and the Challenges of Human Development (Bloomsbury Publishing Inc. 2014)
3. Chakraborty D and Mukhopadhyay K, Water Pollution and Abatement Policy in India: A Study from an Economic Perspective (Springer 2014).
4. Devotta S and Rao C (eds), Environmental Status of India (Atlantic Publishers & Distributors, 2008).
5. Dharmendra S, Environment Law (PHI Learning Pvt. Ltd. 2007).
6. Goel P, Water Pollution: Causes, Effects and Control (New Age International 2006).
7. Gopal K and Agarwal A, River Pollution in India and Its Management (A.P.H. Publishing Corporation 2003).
8. Helmer R and Hespanhol I (eds), Water Pollution Control: A Guide to the Use of Water Quality Management Principles (CRC Press 1997).
9. Kumar S, Environmental Policies in India (Northern Book Centre 2009).
10. Naseem M, Environmental Law in India (Kluwer Law International 2011).
11. Patro L and Panigrahy R, Environmental Pollution and Hazards (Discovery Publishing House Pvt. Ltd. 2008).
12. Thakur K, Environmental Protection Law and Policy in India (Deep & Deep Publications Pvt. Ltd. 2007).
13. Trivedi P, Environmental Pollution and Control (APH Publishing Corporation 2008).
14. Venkat A, Environmental Law and Policy in India (PHI Learning Pvt. Ltd. 2011).

JOURNAL ARTICLES:

1. Bhargava D, 'Foolproof Pollution Control of Indian Rivers' (1998) 5 IJEMS 162.
2. Das D, 'Pollution Database of Indian River Water and Possible Recruitment of *Anabas testudineus* Bloch' (2015) 2(4) IJFAS 103.
3. Mishra N and Mohapatra S, 'Effect of Gangetic Pollution on Water Borne Diseases in Varanasi: A Case Study' (2009) 40 IJPSM 39.
4. Rai B, 'Pollution and Conservation of Ganga River in Modern India' (2013) 3(4) IJSRP 1.

WEBSITES:

1. Chand S, 'Five Major Causes of Water Pollution in India' (Your Article Library) <www.yourarticlelibrary.com/water-pollution/5-major-causes-of-water-pollution-in-india/19764/> accessed 11 August 2015.
2. Hudda S, 'River Pollution: Causes, Actions and Revival' (Janhit Foundation) <www.janhitfoundation.in/pdf/booklet/river_pollution_causes_action_and_revival.pdf> accessed 10 August 2015.
3. Jason B, 'Half of India's rivers are polluted, says government report' (The Guardian, 07 April 2015) <www.theguardian.com/world/2015/apr/07/half-india-rivers-polluted-new-government-report> accessed 12 August 2015.
4. Presse A, 'India River Pollution: 80 Percent of Indian Sewage Flows Untreated Into Country's Rivers' (Huffington Post 05 April 2013) <huffingtonpost.com/2013/03/05/india-river-pollution-sewage_n_2810213.html?ir=India&adsSiteOverride=in> accessed 10 August 2015.