

# CAUSES OF RIVER POLLUTION IN INDIA AND ITS IMPACT SOCIO-ECONOMIC DEVELOPMENT

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## Abstract

River Pollution has become a menace these days. Even the most prestigious and sacred rivers of India have been facing the curse of pollution for a long time. This has not only adversely affecting the availability of fresh potable water in the country but also resulting in many contentious and dangerous diseases loss of tourism and harm to the property. All this has been happening due to the fault and negligence of Administrative Agencies and Common Citizens as they are using these precious sources of clean water in absurd and unreasonable manner. It is the need of time that these rivers should be bring back to their natural state by eradicating the pollution so that their water once again become wholesome and clean.. But again cleaning these rivers is not an easy task. Though the Programmes of river cleaning are going on these days by the Government of India but the cost of these Programmes is enormous. Were these rivers not polluted this money could be utilized for some welfare purpose.

India is a country, which has rich history, not only of social and economic prosperity, but also of Environmental Richness. But, we cannot claim today the same, because in modern time India is suffering from economic crises, and unplanned development is resulting in pollution of rivers, which are considered as “Godesses” in the Indian Culture. Ample money has been spend on cleaning theses rivers as they are the primary source of water supply to most of the States in India, still, the desirable results are yet to be achieved. In this manner, River Cleaning Programmes in India, like Ganga Action Plan and National River Conservation Plan, in a sense, are also contributing in the economic crises of the country, as lot of money of public has been spend on these Plans. But, This money can be saved if we work upon the causes of river pollution, which will serve two purposes, *First*, the eradication on social evils, and, *Second*, the rivers will be cleaned once again.

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According to the Preamble of the Constitution of India, 1950 “We the People of India, having solemnly resolved to constitute India into a Sovereign, Socialist, Secular, Democratic Republic and to secure to all its citizens: Justice-social, political and economic...”. Keeping in view the Socio-Economic Development of India, clause (b) of Article 39 provides that “the ownership and control of the material resources of the community are so distributed as best to subserve the common good”<sup>1</sup>. Water is one the important material resources of the community, without which, neither the social development nor the economic development is possible. Today, water pollution has become a menace for India, which is, in fact, hampering the socio-economic development of India.

The fact that socio-economic development of the country is at the nucleus of the State’s Policy is clear when India adopted the socialist model of development<sup>2</sup> after India got the independence from the Britishers. Though, there is no denial from this truth, that India has achieved tremendous growth in absolute terms in the recent past, however, the irony is that, this growth has not reached uniformly to all facets of the social life. River Pollution is one of the such fact, which, has been increasing for a long time after the independence, and it is one the biggest hurdle in the India’s growth and economic progress. To eradicate the pollution of water of Rivers in India, the Government of India has taken many initiatives like Ganga Action Plan and National River Conservation Plan, but after spending millions of Dollars upon them the result is, still, zero.

If we work upon the under mentioned factors, of River Pollution in India, millions of dollars can be saved by us, which are going to be spend on the programmes of river cleaning in future, if state of affairs of Indian Rivers would not improve.

Natural factors may be, at some extent, responsible for causing the pollution of rivers, but in India, they are not responsible for tragic state of affairs of our rivers. We, the people of India and our Government is responsible for the misery of our rivers. In other words, human activities, which have tendency to cause

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<sup>1</sup> . The Constitution of India, 1950.

<sup>2</sup> .Chronicle “Socio-Economic Development” IAS Edition Delhi, (2012), p.2.

defilation of water, of any water body including rivers, are liable for the pollution hazard of river water, which is resulting in economic loss also.<sup>3</sup>

River pollution, generally originates from discharge of domestic sewage,<sup>4</sup> industrial effluents, or agricultural run-off into the water of rivers. The assault on Indian rivers from growing population, agricultural modernization, unplanned urbanization and industrialization is enormous and growing day- by- day.<sup>5</sup>

Broadly, the human causes responsible for pollution of water of rivers are mentioned underneath. They are:

- {i} Growing Population,
- {ii} Poverty,
- {iii} Urbanization,
- {iv} Industrialization,
- {v} Agricultural run-off and Improper Agricultural Practices, and
- {vi} Religious and Social Practices.

**{i} Growing Population:**

The rapid pace of growth of population in India, is primarily responsible for the significant increase in the level of pollution of rivers. With the increasing rate of growth of population, the human activities around the bank of rivers also increased, which results in contamination of water. An intimate relationship is found between human number (population) and environment. The impact of population on environment, in general and on rivers, in particular, is harsh. We

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<sup>3</sup> .According to the Millennium Assessment Report, 2005, there has been severe attacks carried on by the man, on those life supporting systems of nature, which are considered as basis to life on the planet. there is warning that if such harmful tendencies of mindless extraction and exploitation of nature continuous for next 50 years, there will serious threat on various forms of life. See “Kurushetra”, Ministry of Rural Development, Government of India, New Delhi (December, 2005), p. 48.

<sup>4</sup> . P.W. Birnie & A.E. Boyle; “International Law And The Environment”, 2<sup>nd</sup> Edition, Oxford University Press . New Delhi, (2004), p.306.

<sup>5</sup> . State of India’s Environment – The Citizens Fifth Report, Part-I, published by ‘Centre for Science and Environment’, New Delhi, (1999), p. 58.

can understand the effect of population growth on rivers by a simple formula. Population affluence, i.e. material aspects of per capita consumption of goods and resources, and technology of production. Using appropriate indices, these factors can be incorporated into an 'Environmental Impact Equation' as under.<sup>6</sup>

$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

$$\text{or } I = P.A.T.$$

The impact of growing human population on the river waters can be found out by above-mentioned formula.

Population growth is directly related with more resource consumption. In order to meet the increasing demands and expectations of the growing population, enormous pressure creates on earth's finite natural resources including availability of fresh potable water. Rivers, as the finite resource of fresh water,<sup>7</sup> have been bearing the burden of demand of water for huge increasing population, not only by providing clean and fresh water for fulfillment drinking and other needs of the man, but also by way of receiving back the filth of the human beings in most parts of the world.

As far as India is concerned, on 11<sup>th</sup> May, 2000, India crossed the One billion (100 Crore) mark, that represents the 16 percent of the total World's Population, while the total surface area of the Globe occupied by India is just 2.4 percent. If current trend continues, India may overtake China in 2045, to become the most populous country of the world. It is to be noted that quantity of water in the rivers have not increased with the increase of population, but they are exploited to fulfil the requirements of water for the growing population.

The gravity of problem can be revealed by this alarming fact that, while global population has increased three-fold in the twentieth Century, from 2 billion to 6 billion, the population of our country increased about five-fold from

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<sup>6</sup> . A. Ehrlich and P. Ehrlich, "The Population Explosion", Simor & Schuster, New York (1990), p.58.

<sup>7</sup> . . Kailash Thakur, "Environmental Protection- Law And Policy In India", Deep & Deep, New Delhi (1999), p.19.

238 million (23 Crore) to 1 billion, in the same span of time.<sup>8</sup> The consequent result is depletion and defilition of resources including depletion and defilition of water of rivers. Besides this, the result of growing population is generation of huge wastes including waste water, which is to be disposed-off into the environment, in general and particularly into the rivers.<sup>9</sup>

India's current annual increase in population, which is about 15.5 million per annum, is large enough to neutralize the efforts to conserve the resources, endowment and environment,<sup>10</sup> and this fact is well reflected in the reports about the state of water quality of rivers. For example, about 86 percent of diseases in India are directly or indirectly related to poor quality of drinking water, while another devastating fact is that about 70 percent of India's water is polluted.<sup>11</sup> A river in the State of Madhya Pradesh, is known as 'Khooni Nadi', as excessive iron element discharged into the river water by the riparian populace, have turned the water red.<sup>12</sup> A recent World Water Development Report of the United Nations Organization (U.N.O.) has categorized India among the countries with poor water quality. India ranks a shocking low at 120<sup>th</sup> place out of 122 countries.

A Report reveals the fact that Development of India would be hamper at every stage due to growing population and the developmental goals, which are supposed to be achieved by the country in future, have to face the adverse impact, due to growing population. Not only the unemployment will go up tremendously, but nation also have to face the scarcity of water as well as deficiency of food products within twenty-five years from now, i.e. from the year of 2025.<sup>13</sup>

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<sup>8</sup> . "National Population Policy-2000", Courtesy: Department Of Family Welfare, Ministry Of Family Welfare, Government Of India, New Delhi. See Employment News, New Delhi (23<sup>rd</sup> – 29<sup>th</sup> March, 2002), p. 1.

<sup>9</sup> . . Kailash Thakur, "Environmental Protection- Law And Policy In India", Deep & Deep, New Delhi (1999), p.26.

<sup>10</sup> . . "National Population Policy-2000", Courtesy: Department Of Family Welfare, Ministry Of Family Welfare, Government Of India, New Delhi. See Employment News, New Delhi (23<sup>rd</sup> – 29<sup>th</sup> March, 2002), p. 1.

<sup>11</sup> . "A Report by an N.G.O. [Consumer Unity And Trust Society (C.U.T.S.)] -2005", Hindustan Times, New Delhi (31<sup>st</sup> August, 2005),p.12.

<sup>12</sup> . Id.

<sup>13</sup> .Dainik Bhaskar, Ajmer (11<sup>th</sup> July, 2005), p.5.

Surging population would require space for living that will increase the rate of deforestation. Deforestation will cause the shortage in rainfall, which will be adversely affect the volume of water of rivers, because rain water is an important source of augmentation of volume of water in the rivers. Less water in rivers means more chances of pollution.

The exponential type of population increase necessarily means more houses, more demand of food grains, clothing, increased production of vehicles, need of more water for various purposes, health care and other basic amenities.<sup>14</sup> The overall impact of population increase is manifest in the form of water, air and land pollution...<sup>15</sup>

It is submitted that most of the Indian Rivers are extremely polluted due to the discharge of municipal sewage, which is the result of increasing human habitat. The effects resulted from the population growth on water and other commodities of daily use are mentioned in Table-1.

The problem has global dimension. The human population of the world stands, at present over 6.5 billion, it is further expected to reach 9.1 billion by 2050.<sup>16</sup> This will inevitably put extra stress on the natural resources of the earth, which are simultaneously disappearing.<sup>17</sup> Not only the Indian Rivers but the Rivers of the whole world have been facing the mayhem of growth of population because they are exploited beyond their capacity and also polluted by the populace, which is detrimental for them.

Rivers are not only affected, directly in adverse manner with the growth of population, but growing population will make it very difficult for the Government also, to protect the rivers from the misery of pollution. Under

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<sup>14</sup> . Rosencranz, Diwan and Noble, "Environmental Law and Policy in India-Cases, Materials and Statutes" Tripathi Publication, New Delhi (1992), p.20.

<sup>15</sup> . Id.

<sup>16</sup> . Report of United Nations Department of Economic and Social Affairs, "Population Challenges And Developmental Goals", Population Division (2005), at <http://www.un.org/esa/population/publications/pop-challenges/Population-Challenges.pdf>

<sup>17</sup> .South Asia Human Rights Documentation Centre, "Introducing Human Rights: An Overview Including Issues Of Gender Justice, Environmental And Consumer Laws", Oxford University Press, New Delhi (2006), p.203

Article 39(b) of the Constitution of India, it is the moral obligation of the Government to distribute the material resources of the community as

**TABLE-I<sup>18</sup>**

**The Impact of growing population on the resources in India**

S.NO	Item	2001	2011	2021	2031	2041	2051
1.	Projected Population (In Million)	1027.02	1178.4	1287.88	1394.66	1468.4	1516.86
2.	Number of New House Holds to be created	24230000	66870000	53390000	54740000	75690000	90356279.5
3.	Demand of Land for Residential Use (In Hectare)	48460000	7374000	10678000	10948000	15138000	18071256
4.	Net Land for Agriculture (In Hectare)	117712000	122558000	133236000	143914000	154862000	170000000
5.	Drinking Water Requirement (million litter/day)	138647.7	159084	173863.8	188279.1	198234	204776.1
6.	Average Food Requirement per capital per day (million tonus)	0.564861	0.64812	0.708334	0.767063	0.80762	0.834273
7.	Number of New Job Seekers (in million)	712.078	730.608	811.3644	892.5824	954.46	1001.1276
8.	Food Requirement (Million Tonus per year)	206.174265	236.5638	258.54191	279.977915	394.7813	304.509645
9.	Food Production (Million Tonus per year)	211.17	243.085	262.36	273.0351	284.09451	261.6426
10.	Gain/Deficit Food Grains (Million Tonus)	4.995735	6.5212	3.81809	(-) 6.942895	(-) 10.6867	(-)13.16704

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<sup>18</sup>.See Employment News, New Delhi, (1<sup>st</sup>-7<sup>th</sup> November, 2003), p.1.

best to sub-serve the common good. Similarly, under Article 47, it is the duty of the Government to raise the standard of living of common people. As we know that water of rivers is not unlimited, and if an attempt made by the Government Authorities to distribute equally the water of rivers to every individual, there will be fear of deficiency of water. On the other hand, if Government prefers to save the rivers from scarcity of water and declare them a prohibited place, in order to prevention and control of pollution, it will be blamed for lack of constitutional commitment to serve the human being.

Thus, Growing population is not only the major cause of river pollution, but also, it is mother of other related problems like poverty, urbanization, unemployment and degradation of environment, which in turn, also contributing in the pollution load of rivers.

**{ii} Poverty:**

‘Lasting peace cannot be achieved unless large population groups find ways in which to break out of poverty’.<sup>19</sup> The observation of ‘Nobel Committee’ is very significant for the solution of almost all the problems of the world, besides conservation of rivers. Poverty contributes equally to both population growth and environmental pollution, particularly to the river pollution.

‘Poverty’ can be define as the ‘inability of an individual or household to attain a minimal standard of living’.<sup>20</sup> Unhygienic and insanitary conditions are another bye-product of poverty affecting human health. Each year, between 3 and 4 million people, mostly poor and deprived, perish due to lack of access to water and sanitation.<sup>21</sup> Poverty reduces people’s capacity to use resources in a sustainable manner, it intensifies pressure on the environment.<sup>22</sup>

“Sadly, the impoverishment of the poor is accompanied by simultaneous and systematic erosion of the basic means of their subsistence, the environment,

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<sup>19</sup> . Observation of “Nobel Committee” while awarding the ‘Nobel Peace Prize-2006’ to the Mohammed Yunus of Bangladesh. Hindustan Times, New Delhi, (14<sup>th</sup> October, 2006), p.1.

<sup>20</sup> . “Our Planet, Our Health”, Report Of The World Commission On Health And Environment”, (1992), p.38.

<sup>21</sup> . “Human Rights And Access To Water And Sanitation-Acting On The Report Of The O.H.C.H.R. Noted from [www.cohre.org/water](http://www.cohre.org/water)

<sup>22</sup> . S.C. Shastri, “Environment Law In India”, 2<sup>nd</sup> Ed., Eastern Book Company, Lucknow (2005), p.14.

with its life supporting natural resources – land, water and forest.”<sup>23</sup> Poor people, are helpless, and they pollute the rivers because they use to do all their daily activities near the bank of rivers. The deprived people lack the sufficient means of livelihood, proper housing, access to sanitation facilities, health care, proper nutrition etc. Hence, they induced to have the recourse to the natural and available resources, for their survival. They use the water of rivers for their daily use like drinking, bathing and washing, but use of water in unhygienic and unsustainable manner cause damage to the river.

Today, there are more than one billion people world - wide living on less than one U.S. \$ per day, more than 2.7 billion that live on less than two U.S. \$ a day.<sup>24</sup> There are as many as four billion people living on less than \$ 15,00 a year, the so called ‘bottom of pyramid’.<sup>25</sup> They have been struggling with the menace of hunger and most of them are unattentive towards environmental problems.

These poor people, however, it is submitted may not causing damage to the environment, ‘intentionally’, particularly to the rivers, but they are helpless to take the resort of natural products available in the state of nature for their very survival. In India, the challenge of poverty is, definitely, very tough. The challenge to arrange jobs for the poor is much difficult even for the State, in the background of rapid pace of population growth. Nearly 60 percent of the increase in population will be concentrated in just five States namely Uttar Pradesh, Bihar, Madhya Pradesh, Orissa and Rajasthan. Except Rajasthan, the remaining four States have rich river network. Bihar and Uttar Pradesh-according an estimate-are home to 40 percent of the 170 districts identified by the Government as backward districts.<sup>26</sup>

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<sup>23</sup> . “Our Common Future”, Report of the World Commission on Environment and Development (1987), p.14.

<sup>24</sup> . South Asia Human Rights Documentation Centre, “Introducing Human Rights: An Overview Including Issues Of Gender Justice, Environmental And Consumer Laws”, Oxford University Press, New Delhi (2006), p.202. See also United Nations Development Programme, “Fast Facts: The Faces Of Poverty”, Millennium Project at <http://www.unmillenium project.org>

<sup>25</sup> .Lucia Wegner, “Lend Some Thought”, Hindustan Times, New Delhi (24<sup>th</sup> October, 2006), p.8.

<sup>26</sup> . Hindustan Times, New Delhi, (24<sup>th</sup> August, 2006), p.8.

There are over 26 crore people living below poverty line (B.P.L.) in India and more than 19 crore of them are in rural areas. This information was given by the Union Government to the Lok Sabha on 24<sup>th</sup> August, 2005. While Uttar Pradesh top list of States having highest chunk of B.P.L. population estimated at 5.3 crore, it is followed by Bihar with 4.3 crore and Madhya Pradesh with about 3.00 crore.<sup>27</sup>

These five States are home to 45 percent of the total population of India. It is estimated around 45 percent of the poor and deprived people live in these States. Projection by a study reveals that in the next 20 years these States will account for more than half the population of the country, out of which 75 percent would be poor, if current trend continued.

Therefore, the rivers which flows from these States and have been bearing the burden of pollution, would have face the ill-consequences of poverty, by receiving the filth of the human beings. It is true that poor cause the contamination of water of rivers, and damage the environment. But the chunk of destruction by the poor, is too small as compared to the damage caused by the rich. Poor use the water resources for their daily work on the bank of rivers to meet their basic needs of survival under compulsion, when other resources are either not available to them or the available ones are beyond their economic or paying capacity.<sup>28</sup>

It is submitted that for eradication of pollution of rivers and,thus, on saving of expenditure on river cleaning, participation of general public is necessary. But when the major, portion of the population of the country is poor, living without the security of livelihood it is unrealistic assumption that such people would join with the campaign of prevention and control of pollution of water of rivers. Thus, it is recommended that, pro-poor welfare schemes like National Rural Employment Guarantee Act, 2005 should be implemented in all the districts of India, so that poor could get the employment for at least 100 days a year.

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<sup>27</sup> . "Yojna", Ministry of Information & Broadcasting, Government of India, New Delhi (October, 2005), p.74.

<sup>28</sup> . Kailash Thakur, "Environmental Protection- Law And Policy In India", Deep & Deep, New Delhi (1999), p.20.

Eradication of poverty from the Indian Society is intrinsically related with the mission of saving the rivers from the pollution.

**{iii} Urbanization**

In India there has been a major shift of population from rural areas to urban areas with a view to have better livelihood and better standards of living. As a result of this large human concentration there are changes that are likely to occur in the urban environment, within its physical and socio- economic aspects. Urbanization, for river means, more pollution load.

In India, in 1901 there were 1827 urban agglomerations with a population of 25.85 million, which was 10.84% of the then total population, whereas as per 1991 census there are 3768 urban agglomerations/towns covering a population of 217.8 million, which works out to about 25.72% of the country's population. The class-I (population of one hundred thousand and above) towns, account for 65.2% of the total urban population of the country in 1991. There are now 23 metropolitan cities with a population of one million or more each, as compared to 12 such cities in 1981. These 23 cities account for roughly one-third of country's urban population and one twelfth of country's total population. There are 5 mega cities with a population of more than 5 million each and almost one fourth of the population living in class-I towns in the country lives in these mega cities.

Most of the major metropolitan cities as well as other important cities are located at the banks of rivers. For example Delhi is situated at the bank of river Yamuna, Agra is also situated on the bank of Yamuna. Similarly, Kanpur, Allahabad, Varanasi, Patna and Calcutta situated on the bank of holy river Ganga, while Lucknow is on the bank of river Gomti. Besides these, there are many town and cities situated on the bank of rivers. As we know that in India, in most of the cities and towns, the city waste, including sewage and trade effluent go into the rivers, because they are treated by the municipal authorities as dumping yard for disposal of waste water.

According to the projections by the Census Office, amidst the fear of increase of river pollution, large chunks of the country are going to be urbanized over the

next two decades. This is a part of global trend where people moving from villages to town and cities. As economy keeps growing at a healthy clip and the services sector continuous to boom, it is natural that people are moving away from the traditional source of livelihood like agriculture. This has meant mass exodus from villages to cities.<sup>29</sup>

Urbanization rate in India is very fast. It has increased from 10.84% in 1901 to 28.5% in 2001. According to the Census figure of 2001, the number of class I cities and class II towns was around 900. One of the conspicuous features of urbanization in India is the skewed distribution of population with as much as 28.3% of the urban population in 35 metropolitan cities. Unregulated growth of urban areas, particularly over the last two decades, without infrastructural services for proper collection, transportation, treatment and disposal of domestic waste water led to increased pollution and health hazards. Fast urbanisation followed by increase in prosperity resulting in steep increase in waste generation.

On the other hand, with the environmental aspects, urbanization means more generation of sewage, domestic waste, waste water and accumulation of solid waste. Rapid and unplanned urbanization has been contributing to environmental pollution, in general and river pollution, in particular.<sup>30</sup> 'Environmental factors have given too little consideration on the thinking on urbanization in India. Yet, they are important and their importance will increase with increasing urbanization. The levels of water and air pollution are already high in many cities, and they could increase to intolerable level with further increase in their Populations.'<sup>31</sup> Rivers and streams that pass through cities and towns are turning into toxic streams....due to discharge of untreated sewage into them.<sup>32</sup> Now it is said about the existing town and cities, that the "planner of the cities and towns had not foreseen the future problems, which could arose later, while planning them. Many of the towns and cities that came up on the bank of a river did not

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<sup>29</sup> . "Urban Legends-Shift In Population From Country To City", The Times Of India, New Delhi (9<sup>th</sup> August, 2006), p.16.

<sup>30</sup> . S.C. Shastri, "Environment Law In India", 2<sup>nd</sup> Ed., Eastern Book Company, Lucknow (2005), p.15.

<sup>31</sup> . Shri Nath, "Urbanization In India", Economic and Political Weekly, (22<sup>nd</sup> February 1986), p. 339.

<sup>32</sup> . State of India's Environment – The Citizens Fifth Report, Part-I, published by 'Centre for Science and Environment', New Delhi, (1999), p.207.

give a thought to the problem of urban sewage. Most of the sewage was conveniently allowed to flow into the rivers.<sup>33</sup> Sewage is defined as “the water borne waste derived from home (domestic waste) and animals or food processing plants, and includes human excreta, soaps, detergents, papers and clothes.”<sup>34</sup> According to the Uttar Pradesh Water Supply and Sewerage Act, 1975, sewage “means night-soil and other contents of water-closets, latrines, privies, urinals, cesspools or drains, and polluted water from stress, bathrooms, stables and other like places, and includes trade effluent.”<sup>35</sup>

Most of the world’s sewage is still disposed of untreated. In developing countries, 90 percent or more is release, without treatment of any kind – usually to a water body, including rivers, lakes or an ocean.<sup>36</sup> Not only sewage is major source of nutrients in urban waters but is also poses a significant risk to health from such sewage-borne pathogens as cholera bacterium, hepatitis viruses, salmonellae, and shigellas.

In India, as per the latest estimate of Central Pollution Control Board,<sup>37</sup> about 29,000 million litre per day of wastewater generated from class-I cities and class-II towns out of which about 45% (about 13000 mld) is generated from 35 metro-cities alone. The collection system exists for only about 30% of the wastewater through sewer line and treatment capacity exists for about 7000 mld. Thus, there is a large gap between generation, collection and treatment of wastewater.

Given its sheer volume, sewage is a major threat to local urban water including rivers, and also it become one of the most vexing problem to the urban managers, whom charge with the duty of its safe disposal. A large part of un-collected, un-treated wastewater find its way to either nearby surface water body

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<sup>33</sup> . Id., at p.59.

<sup>34</sup> . S.L. Agarwal, “Environmental Pollution And Law”, Agro-Botanical Publishers, Bikaner (1995), p.126.

<sup>35</sup> . Uttar Pradesh Water Supply and Sewerage Act, 1975. Section 2(25).

<sup>36</sup> . “Lal’s Commentry On Water And Air Pollution And Environment (Protection) Laws”, Revised by M.C. Mehta, 4<sup>th</sup> Ed., Vol.-II, Delhi Law House, Delhi (2005), p.1367.

<sup>37</sup> . See [www.cpcb.nic.in](http://www.cpcb.nic.in)

or accumulated in the city itself forming cesspools. In almost all urban centres cesspool exist. These cesspools are good breeding ground for mosquitoes and also, if they exist near river bank, source of river water pollution. The waste water accumulated in these cesspools get percolated in the ground and pollute the groundwater. Also in many cities and towns conventional septic tanks and other low cost sanitation facilities exists. Due to non-existence of proper maintenance these septic tank become major source of river water as well as of groundwater pollution.

According to a Report of the Ministry of Housing and Urban Poverty Alleviation, the situation of urbanisation get aggravated, with India's economic boom in post-1990 era, which has registered the fastest growth of urban towns with an increase in the number of homeless and relatively poor people in the cities.<sup>38</sup> While acknowledging the increasing pollution load in the cities the report further says "the pressure on cities is increasing because of continuous migration of people into the cities in search of better life."

The challenge to make cities slums free, will remain a big question for city planners, as most of the people, who are poor, lives in slums or develop new slum cluster because they lack the resources of better living. The enormity of the situation can be gauged from the fact that about 23 percent of the urban population live in slums, with almost no facilities of sanitation including hygiene, drinking water, bathroom and toilets.<sup>39</sup> It is estimated that more than 42 million people live in the slums in India, but that number does not include tens of million of others without an address- including squatters, temporary workers and those in illegal or extremely poor settlements.

The people, who have no proper facilities in cities, resort to do all their daily activities like bathing, washing and defecation, on the bank of rivers, and pollute the rivers. In many urban areas, river water is only source of drinking water supply. Thus, a large population is at risk of exposed to water borne diseases of

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<sup>38</sup> . Report of the Ministry of Housing and Urban Poverty Alleviation-2006, Hindustan Times, New Delhi (26<sup>th</sup> December, 2006), p.6.

<sup>39</sup> .Id.

infectious (bacterial, viral or animal infections) or chemical nature (due to fluoride or arsenic). Water born diseases are still a great concern in India.

Rapid population growth, urbanization and industrialization have lead to serious problem of waste management in cities and towns of India. The traditional role of Municipal Corporation is to keep the streets clean, collect garbage from public places and ensure its safe disposal. Most city corporations have the largest number of their employees engaged in these tasks. Yet, only about half to two-third of the waste generated is collected by the staff. With increasing facilities and income, the life-style of urban resident has also been changing. Urban India is, thus, becoming a 'throw-away society'. In larger cities, the composition of wastes is changing with rapid increase in paper, plastic, metal and hazardous materials. If any river passes through these cities, the waste go into the water of river along with run-off in the rainy seasons.

Municipal water treatment facilities in India, do not remove traces of heavy metals. Given the fact that heavily polluted rivers are the major source of drinking water for most of the towns and cities, it is believed that every consumer of water, has been over the years, exposed to quantities of pollution in the river water, which he consumed.<sup>40</sup> Contrary to the common belief, it has been estimated that community or domestic waste accounts for four times as much pollution as the effluents from the industry do, in the rivers.<sup>41</sup>

Discharge of sewage and other domestic waste in to the rivers is the central cause of river pollution in India. Besides this, uncontrolled dumping of wastes of villages, towns and cities into the rivers are additional factors to the pollution load of the rivers. The increased levels of consumption characteristics of the population of urban areas lead to the generation of copious quantities of wastes.<sup>42</sup>

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<sup>40</sup> . State of India's Environment – The Citizens Fifth Report, Part-I, published by 'Centre for Science and Environment', New Delhi, (1999), p.59.

<sup>41</sup> . Kailash Thakur, "Environmental Protection- Law And Policy In India", Deep & Deep, New Delhi (1999), pp.27-28. See also S.N. Jain, "Water Pollution Act, 1974: The Basic Legal Issues" in Paras Diwan (Edited by), "National Seminar On Law Towards Environmental Protection", Chandigarh (10<sup>th</sup>-12<sup>th</sup> February, 1984).

<sup>42</sup> . "Lal's Commentry On Water And Air Pollution And Environment (Protection) Laws", Revised by M.C. Mehta, 4<sup>th</sup> Ed., Vol.-II, Delhi Law House, Delhi (2005), p.1367.

The domestic and municipal sources are responsible for 80 percent of total pollution in rivers.<sup>43</sup>

Thus, unplanned infrastructure of cities and towns, coupled with failure of municipal authorities, to prevent the inflow of sewage and other domestic waste into the rivers, is resulting in severe pollution of rivers.

**[iv] Industrialization:**

The most challenging environmental problems India is facing stem from the rapid growth of the polluting industries in the urban areas. For years, industrial development came without either planning or environmental controls. The industrial sector has mushroomed in urban agglomeration. Unplanned growth has caused an overall decline in environmental conditions.<sup>44</sup>

Major industrial sources of pollution in India include fertilizer plants, refineries, pulp and paper, leather tanneries, metal plating, chemical and pharmaceutical and dye intermediate industries. A 1994 survey of the quality at 138 sampling locations in 22 industrialized zones of India revealed that water of rivers in all 22 zones was not fit for drinking, due to high bacteriological and heavy metal contamination.<sup>45</sup>

It is a common practice that a large number of industries, which are located on the banks of rivers discharge their untreated industrial effluents into the river water. Industrial Effluents contain, *inter alia*, mercury, lead, cadmium and copper etc., which are harmful to the living organisms.

The problem of pollution of water of rivers, due to discharge of industrial waste has already attained a new height in the country. With the increase in numbers of industries in India, the discharge of industrial effluents also increased tremendously. The considerable degradation of raw water sources like rivers, due

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<sup>43</sup> . Id. at, p.185.

<sup>44</sup> . Dr. D.N. Tewari, “ Environment Protection : Key To Sustainable Development”, noted from <http://pib.nic.in/welcome.html>

<sup>45</sup> . See Reports Of Central Pollution Control Board, (1994-1995) at <http://www.cpcb.nic.in>

to discharge of trade effluents from industries, project adverse effects on the quality of water and subsequently its utility at downstream.<sup>46</sup>

Industrial wastes or ‘trade effluents’<sup>47</sup> as it is legally called includes any liquid, gaseous or solid substance, which is discharged from any premises used for carrying on any industry, operation or process or treatment and disposal system other than domestic sewage.

The largest volume of discharged wastes, is in the form of effluent, that is liquid waste water generated from the industries during or after the manufacturing process because every industry use water and discharge the same water after using it for manufacturing of products. The industrial effluents, which dispersed in the aquatic environment in different ways, generally contain various toxic pollutants, which are harmful and injurious to the human being, animals, plants and property. (See Table-2)

Most of the Indian cities have major industries in and around their periphery. There is heavy industrial effluents expelled out, from the various categories of industries such as jute mills, textile mills, tanneries, paper mills, large distilleries etc. having variable characteristics and it is discharged into the Hoogli Estuary in Calcutta-Asansol region.<sup>48</sup> The highly industrialized belt of Durgapur-Asansol in West Bengal having steel plants, coke-oven plants, distillery, pulp and paper mills, coal-based chemical industries, a fertilizer plant and several other industries have been discharging trade effluents into the water of Damodar river for a long time. River Damodar has become one of the most polluted river of the country, due to extreme discharge of pollutants into it, and its water is so polluted that it become unfit for the consumption by any creature, including human being.

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<sup>46</sup> . ‘Lal’s Commentry On Water And Air Pollution And Environment (Protection) Laws’, Revised by M.C. Mehta, 4<sup>th</sup> Ed., Vol.-II, Delhi Law House, Delhi (2005), p.185.

<sup>47</sup> . Water (Prevention and Control of Pollution) Act, 1974, Section 2(b).

<sup>48</sup> . ‘Lal’s Commentry On Water And Air Pollution And Environment (Protection) Laws’, Revised by M.C. Mehta, 4<sup>th</sup> Ed., Vol.-II, Delhi Law House, Delhi (2005), p.1176.

Periyar, the largest river in State of Kerala, has number of factories on its lower bank. There are fertilizers, chemicals, metallurgical and rayon units. According to a study, it is

**Table-2****Water pollution and Sources<sup>49</sup>**

.No	Pollutant	Principle Source	Distribution in Environment
1.	Pathogenic Organisms	Domestic Waste (Human and Animal Excreta) Agricultural run-off	Fresh Water, marine Environment, soil and air
2.	Solid Wastes	Domestic, Municipal, Commercial, Industrial and Agricultural wastes	Fresh water, marine Water, land and soil
3.	Degradable Organic matters	Sewage, garbage, Industrial wastes, Agricultural Wastes	Fresh water, marine Water, land and soil
4.	Oil	Shipping accident, Run-off from transport wastes-Boats and Ferries, Polluted Land drainage, Industrial (Refineries) wastes, off-shore oil production.	Fresh water, marine Water and land
5.	Organopesticides (Chlorinated hydrocarbons)	Application in Agriculture, Public Health, Industrial wastes (Pesticides, Wood and carpet manufacturing)	Fresh water, marine Water, land and air
6.	Poly Chlorinated biphenyls	Sewage, Industry (Electrical, Plastics, Lubricants) and uncontrolled disposal PCB containing products	Fresh water, air and food
7.	Detergents	Sewage, Industrial wastes, and Washing places.	Fresh water, marine water and land
8.	Dyestuffs	Industrial wastes	Fresh water, marine water and land
9.	Phenols	Industrial wastes	Fresh water, and land
10.	Inorganic Acids and Alkalis	Industrial wastes, burning of fossil fuels, medical and research laboratories, Mercury Industry (Pulp, Paper, Mining, Refining Process)	Fresh water, marine water, air, soil, and food.
11.	Lead	Anti-knock ingredients of motor-fuel, Lead smelting chemical industry, Lead paints and enamels, Agricultural pesticides.	Fresh water, marine water, air and food
12.	Cadmium	Industry (mining and metallurgy, chemical, food industry, leather industry)	Fresh water, air and soil.
13.	Arsenic	Industrial wastes, combustion of coal, food, agricultural use (fertilizers and	Fresh water, marine water, air and soil.

<sup>49</sup> .Source: Prof. R.A. Malviya, "Environmental Pollution And Its Control Under International Law", Chugh Publication, Allahabad (1987).

		insecticides)	
14.	Phosphates	Sewage, Agricultural run-off, Industrial effluents	Fresh water and Marine water.
15.	Nitrates and Nitrites	Sewage, fossil fuel burning, Industrial wastes and agricultural run-off	Food, Fresh water and marine environment
16.	Fluorides	Industrial Processes(Production of aluminum, steel, phosphate fertilizers, brick making Agricultural run-off)	Air, Fresh water, soil and food.
17.	Sulphides	Industrial effluents	Fresh water and food.
18.	Cyanides	Industrial effluents	Fresh water
19.	Chlorates	Industrial effluents	Fresh water
20.	Ionizing radiation (including radio nuclides)	Medical uses, weapon production and testing, Nuclear power production, uses of radioisotopes and radiation	Fresh water, marine water, air, land and soil.
21.	Heat	Fossil fuel and Nuclear Power station, Urban areas	Fresh water, marine water and air.

estimated that over 170 million litres of effluents are discharged into the river, containing suspended solids, metals, urea, ammonia, fluorides, chlorides and other toxic chemicals.<sup>50</sup>

The story of remaining rivers of India like the Ganges, the Yamuna , the Godavari and the Gomti is, more or less, same and all have been suffering due to inflow of industrial effluents and sewage for many years.

It is submitted that the Small Scale Industries (hereinafter referred as S.S.I.) forms an important sector in Indian economy in terms of contribution to production, GDP, exports and employment. The sector accounts for 40% of the industrial production, 35% of the total exports and employs about 167 lakhs persons in about 33.2 lakhs SSI units in the country. The SSI sector manufactures about 7500 types of products. This sector also supplies the lower income groups with inexpensive consumer goods and services as well as machines and the sophisticated requirements of technology based industries in India and abroad.<sup>51</sup>

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<sup>50</sup> .Id., at p. 1180.

<sup>51</sup> . Annual Report Of Central Pollution Control Board, New Delhi, (2000-2001)

However, due to uncontrolled and haphazard growth, SSI sector is also a significant contributor to environmental pollution in general and river pollution in particular. Therefore, it is necessary to estimate the pollution load from SSI sector, to prioritize the pollution control strategies, to identify the low cost clean technologies and to bring out issues that need to be taken up for effective pollution control policy for SSI sector in India. The level of pollution caused by S.S.I. sector per unit of output is higher than their counterparts in developed countries. The reasons are

- Continued usage of outdated and inefficient technologies that gives large amount of wastes
- Large and unplanned industrial conglomeration
- Lack of resources for enforcement and implementation of pollution control performance
- Productivity and environmental performance given a back seat.
- However, SSI units have different reasons for non-implementation of env-standards.
- They operate in very small area (in 100 sq ft area)
- No space for setting up of pollution control systems
- No funds for setting up of pollution control systems
- No guidance available from pollution control Boards/Committees
- Cost effective technologies for pollution control are not available.

All the SSI units aggregate to a very large quantity of waste, and wastewater. The share of SSI wastewater generation is about 40% hence pollution control in SSIs is utmost required. As the SSIs play significant role in economic development, retardation in their growth is not desirable but continuation of environmental pollution is equally undesirable. Obviously, innovative measures to control pollution are required to balance the two apparently contradictory compulsions.

It is submitted that the volume of untreated municipal wastes fall into the rivers, is much greater than the industrial effluents. But the former is less harmful to the rivers in comparison to the industrial effluents, because sewage and domestic waste is biodegradable. On the other hand, industrial pollutants are highly toxic and non-degradable substances. But, in both the cases, river get polluted, and in order to clean the river, lot of money would have to be spend.

**[v] Withdrawal of Water:**

A Water Course require continuous flow of large volume of water, to be called as river, and it is necessary for the survival of the river that certain quantity of water must be maintained, for sustenance of flow of the river. When the minimum required quantity of water get further reduces in the river, it starts perishing. When a river get dried, its fishes and other creatures have died, which resulted in huge loss of economy, as fishes are used for food.

**[vi] Agricultural Run-off and Improper Agricultural Practices:**

Agricultural wastes include wastes arising from production and processing of food and other crops and from the raising and slaughter of livestock.<sup>52</sup> It include farm animals wastes, fertilizers and pesticides etc. farm animals waste consists of excreta, urine, slurry etc, which are organic in nature.

More than two billion tones of agricultural wastes produces each year include slaughter house refuses, useless residues from crop harvesting, vineyards, orchard prunings, and greenhouse wastes.<sup>53</sup> (See Table-3) These materials create problem when they allowed to enter into the water sources like rivers and lakes during the cleaning of the confinement areas or during the period of heavy down-pour when the run-off carries them into the adjacent rivers or into the other water

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<sup>52</sup> .“Lal’s Commentry On Water And Air Pollution And Environment (Protection) Laws”, Revised by M.C. Mehta, 4<sup>th</sup> Ed., Vol.-II, Delhi Law House, Delhi (2005), p. 1537.

<sup>53</sup> . Id.

courses. Being organic in nature, they increase bio-chemical oxygen demand (B.O.D.) of the receiving water of the river.

**Table-3**

**Solid Wastes from Agriculture**

<b>Source</b>	<b>Waste</b>	<b>Composition</b>
Forms, ranches, Greenhouses	Crops Wastes	Cornstalks, pruning Sugarcane bagasse, drops and culls from fruit and vegetables washer waste, stubble and straw, hulls, fertilizer bags etc.
Animal Husbandry	Forest slash Animal manure Pouch manure Poultry manure Swine manure Animal carcasses	Trees, stumps, limbs, debris Ligning, organic, fibbers, nitrogen phosphors, potassium, proteins, fats. Carbohydrates Ammonia and nitrates proteins, etc, flesh, blood, fat, oil grease
Forms, ranches, Greenhouses	Pesticides, insecticides herbicides fungicides, Vermicides and microbiocides	Chlorinated organics, phosphorous, complex organic and inorganic salts.

India is the largest manufacturer of pesticides in South Asia. Industrialized agriculture, more popularly known as green revolution agriculture, has promoted an extraordinary use of dangerous chemicals in the form of pesticides, weedicides and fertilizers. The pesticides industry has grown rapidly and produces a range of products from D.D.T. (Dichloro diphenyl trichloroethane) and B.H.C. (Benzene Hexa Chloride) to carbamates, which are highly toxic in

nature. The annual production of D.D.T. is about 14,000 tonnes. The 28,000 tones of sludge obtained every year from D.D.T. plants in India, after treatment of the highly corrosive and toxic water, still contains nearly 14 tones of D.D.T. This sludge is usually dumped on low lying areas and the leachate pollutes both ground water and surface water bodies like rivers. Annual production of B.H.C is 41,000 tones and it is believed that some 1.5 tones of B.H.C. lost in treated effluent and another in sludge.<sup>54</sup>

Pesticides used in agriculture cover a wide range of organochlorine (D.D.T., B.H.C, Dieldrin , Aldrin) , polychlorinated biphenyls (P.C.Bs.) , synthetic auxins etc. Many of these compounds are not only on-biodegradable, but also, hardly soluble in water. Traces of fertilizers and pesticides are washed into the water bodies like rivers and lakes, located near the vicinity, at the on-set of the monsoon or whenever there would heavy down-pour.<sup>55</sup> Farms located near the banks of rivers cause heavy pollution to the water of rivers, because fertilizers and other toxic chemicals and utilized in the farming, go into the rivers along with run-off. As the point entry of such agricultural input is diffused throughout the river basin, they are termed as ‘non-point’ source of pollution.<sup>56</sup>

### **Improper Agricultural Practices:**

Most of the Indian farmers are uneducated. They are unaware about the safe techniques of cultivation, which reduce the level of harmful effects of chemicals used in agriculture. Because of the lack of knowledge about the harmful effects of fertilizers, pesticides and other hazardous chemicals, Indian farmers use them frequently for higher yield, which reach to the river along with run-off and ultimately prove injurious to the water quality of rivers.

“An uneducated farmer tends not to go by the recommended dosage of pesticides, nor does he bother about protection of workers” says A.K. Dikshit,

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<sup>54</sup> .Id., at p. 1409.

<sup>55</sup> . State of India’s Environment – The Citizens Fifth Report, Part-I, published by ‘Centre for Science and Environment’, New Delhi, (1999), p. 63.

<sup>56</sup> .Id.

senior scientist of Indian Agricultural Research Institute (I.A.R.I.), New Delhi. “The recommendations are made on the basis of careful scientific research. But in the Indian context, the farmer generally uses his own interpretations, often uses excess of fertilizers and pesticides.” adds Dikshit.<sup>57</sup> When pesticides and fertilizers are used more than the recommended doses, they remain in the soil or accumulated on the stones, and get dissolve with the rain water in the monsoon season and washed into the rivers or lakes.

After recede at the end of monsoon, river bed coated with fresh deposits of silt provide an ideal farming area. Yet this time tested ancient practice of farming, has now become dangerous as pesticides and fertilizers used on these tracts of land are found to be washed into the rivers during the monsoon. As rivers are the principal source of drinking water for the cities and towns supplied by the water agencies, their pollution means hurdles in the way of municipal agencies to supply the water for domestic purpose because it is already contaminated with residues of pesticides and fertilizers.

Pesticides can have the wide-ranging impact on the ecology of rivers. However,... despite the gravity of the problem of pollution caused by the pesticides, lack of proper policy and even bigger, lack of political will of implementation of that policy, would hamper stringent control on the future use of pesticides in the farming.<sup>58</sup>

A study conducted in Corbett National Park, in Nainital district of Uttarakhand, reveals that the higher reaches of Ramganga river, which flows through the vast area of the park, are intensely used for cultivations and farmers have been using the pesticides in large scale for many years. The contaminants in the form of residue of pesticides and fertilizers, reach into the river water along with run-off, during the monsoon seasons. These contaminants, not only polluting the water of river, but also intoxicating the food web system, found in the river, which is a plausible threat to the rare species of the bird, which come there from distant regions of the world for progeny. Intoxication of food web of

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<sup>57</sup> . Id.

<sup>58</sup> . Meena Menon, “Our Stolen Future”, Sahara Time, New Delhi (17<sup>th</sup> September, 2005), p.20.

the ecology of river has already become a major factor for failure of breeding attempts made by the scientists for the conservation of the species of the bird, in the Park, which are feared to be extinct, from the world within few years, if proper attention would not be given to them.<sup>59</sup>

Thus, excessive use of fertilizers and pesticides in cultivation and lack of knowledge of cultivators about the hazardous effects of these chemicals, is resulting in pollution of water of our rivers and also disturbing the fragile ecosystems of nature.

**[viii] Harmful Religious and Social Practices:**

Faith is a simple word of five letters, yet very powerful when one has it. It is like how, when the five fingers of each hand come together, the entire meaning of their existence changes.<sup>60</sup> Yet, on many occasions this faith cause unimaginable loss to the human beings. Religious and social practices in the Indian Societies in India are glaring example, because they are resulting in damage to the rivers. People worship the rivers as “Goddesses” or “Devi” with great faith in eternity, but these religious activities under the guise of faith, are proving very costly to the rivers, because they involve unmindful and ignorant practices, which cause severe harm to the rivers. Burning of dead bodies on the bank of rivers, throwing of un-burnt or half-burnt bodies in the rivers, throwing of carcasses of animals, mass-bathing in rivers and idol immersion in the rivers during the festive seasons , some example of harmful religious and social practices prevailing in India.

*{a} Cremation of Dead Bodies on the Bank of Rivers :*

In keeping with ancient rituals, the dead bodies are still cremated on the banks of rivers by the religious people in our country.<sup>61</sup> The tones of ash

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<sup>59</sup> . Rished Nauroji, “A S tudy On The Breeding Biology Of Resident Raptors In Corbett National Park”, Bombay Natural History Society (B.H.N.S.) Journal, Vol.-94, (1997).

<sup>60</sup> . Anindita Banerjee, “Wrought Only By Prayer”, Hindustan Times, New Delhi (11<sup>th</sup> December, 2006), p.11.

<sup>61</sup> . State of India’s Environment – The Citizens Fifth Report, Part-I, published by ‘Centre for Science and Environment’, New Delhi, (1999), p. 64.

produces in the process of burning of dead bodies on the bank (*ghats*) of rivers, is eventually thrown conveniently into the water of rivers. In simple words, the Burning-Ghats on the banks of rivers are causing pollution in the rivers.

{b} *Throwing of Un-burnt or Half-burnt Bodies into the Rivers:*

The tradition of throwing un-burnt and half-burnt bodies of holy man like sages and hermits (*sadhus* and *sanyasies*), infants and those who succumb to contagious diseases, into the rivers, has given the issue of pollution in the Indian rivers an unhealthy social dimension.<sup>62</sup> The dead-bodies when thrown into the rivers, undergo the process of decomposition in the water of river, which results in defilation of water.

{c} *Mass Bathing in the Rivers:*

The tradition of taking bath in the rivers, specially on the occasion of religious ceremony, is very old. In olden days when there was abundant of water carried by the rivers, such traditions do not affect rivers, adversely. But the case is no longer same. Much water has been flown from the river till now. Now rivers are facing the scarcity of water, thus, losing their flow. Mass bathing on any occasion is, now no longer good for the ecology of the rivers.

But, mass-bathing is a part of integral religious practices, which is considered as *sacred*, by the religious community. Mass-bathing in the rivers during festive occasions, is prevailing in India. In Allahabad, during the occasion of *Maha-Kumbh* in the year of 2001, more than 20 million people took a holy dip at the confluence (*sangam*) of the Ganges, the Yamuna and the mythical Saraswati. Recently, during the occasion of *Ardh-Kumbh*, million of people from various part of the world had, taken holy bath, at the confluence, in Allahabad. Mass bathing usually takes place on the occasion of religious festivals like *Amavasya*, *Chhath*, *Dussehra*, *Diwali*, *Budh-Poornima* etc. on the river banks, in almost all the rivers of India, and particularly, in the rivers like the Ganges, the Yamuna, the Brahmaputra etc.

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<sup>62</sup>. Id.

Studies have indicate that the Bio-Chemical Oxygen Demand (B.O.D.) of river water goes up when tens of thousands of people simultaneously take a 'holy dip' or '*Pavitra-Snan*'. It is submitted that mass-bathing or holy bath is no longer safe for the persons, who takes it, given the quality of water of Indian rivers, which is extremely polluted. Thus, people by mass-bathing not only putting themselves in the situation, where there is every possibility that they might contract the diseases, but also further deteriorating the quality of water by washing out their filth into it.

{d} *Idol Immersion in the Rivers:*

Idol immersion in the rivers is another environmentally hazardous practice, which is deteriorating the quality of water of Indian rivers. The festive season begins with Ganesh Pooja in September and usually ends with Saraswati Pooja in February.<sup>63</sup> During these festivals, millions of idols are immersed in the various rivers of India. According to an estimate, about 1 million small idols and, also about 1 million large community idols are immersed in the rivers.

Lead and chrome based cheap paints are extensively used in the making of idols in the various cities of our country. Paints containing lead and chrome, have been banned in many countries of the world since they are harmful to the health of the humans. Plaster of Paris (P.O.P.) is commonly used in making of idols, which is insoluble in water and contaminates the rivers by forming an impermeable layer in the river bed, thus, prevents bio-degradation of substances, which causes a build-up of poisonous gases, resulting in destruction of aquatic life.<sup>64</sup>

In olden days the idols were made exclusively of clay, which is eco-friendly, easily dissolve in the water and does not contain any harmful chemical. Such idols were painted with organic dyes, derived from stones, vegetables, seeds, fruits, sea-shells and soils. However these age old practices have now replaced by

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<sup>63</sup> . Bibhuti Mishra, "Immersion Hazards", Sahara Time, New Delhi (17<sup>th</sup> September, 2005), p.20.

<sup>64</sup> . Id.

the modern cheap methods of idol formation, which include use of Plaster of Paris, inorganic paints, which are inherently hazardous to the rivers.<sup>65</sup>

Religious practices also demands that offerings from *pooja* be immersed in the rivers. Not only the floral offerings, but also the other rubbish of the temples and other worship places, usually be thrown into the rivers. It is now common to see the people immersing offerings in plastic bags, further adding to the pollution load of the rivers.

It is submitted that idols made of Plaster of Paris, painted with inorganic paints are highly dangerous to the water of rivers, and also to the health of the any living being, who consume the water of that river. It can be concluded that with the immersion of idols during festival seasons in rivers may contribute increased levels of organic and inorganic load into the water bodies. Thus, idol making from clay painted with lead and chrome free organic paints should be encouraged, so not only the rivers could be saved from the calamities of chemicals, but also the public money on river cleaning programmes.

{e} *Throwing of Animal Carcasses:*

Villagers often throw carcasses of their animals in to the river water, because they are, for them, a cheap and convenient place for disposal of such things. Many of these dead animals might have suffered from contagious and infectious diseases during their life span. Such carcasses of ailing animals, besides defiling of water, also disseminate bacteria and viruses of infectious disease into the water of rivers, thus, putting the health of consumers of water in jeopardy.

### **Economic Cost of River Cleaning**

According to the Press Information Bureau, Government of India,<sup>66</sup> an expenditure of Rs.433 crore has been incurred against sanctioned cost of projects of Rs.462 crore on Ganga Action Plan Phase-1. Projects under GAP Phase-II

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<sup>65</sup> . Id.

<sup>66</sup> . <http://pib.nic.in/newsite/erelease.aspx?relid=79010>, Dated 29<sup>th</sup> April, 2012

were sanctioned in stages from 1993 onwards on receipt of proposals from respective State Governments. The total cost of the projects sanctioned under the ongoing Ganga Action Plan Phase-II is Rs.594.96 crore against which an expenditure of Rs.469.75 crore has been incurred so far.

Yamuna Action Plan (YAP) for abatement of pollution of river Yamuna is being implemented in a phased manner. YAP Phase-I started in 1993 with a sanctioned cost of Rs.705.51 crore against which an expenditure of Rs 682 crore has been incurred. The ongoing second phase of YAP was started in December 2004 with an approved cost of Rs.624 crore with a completion period of 5 years. Starting of this phase took some time due to compliance to the administrative and procedural requirements. Sanctioned cost of projects under this phase so far has been Rs. 666.76 crore. Excess sanctioned cost is due to revision in scope of works, taking up of additional works etc. which are borne by the respective State Governments.<sup>67</sup> The National River Conservation Plan (NRCP) presently covers 39 rivers in 185 towns in 20 States. Similarly, on National River Conservation Plan an expenditure of Rs.4475 crore has been incurred so far.<sup>68</sup> The Central Government has approved a project in April 2011, under the National Ganga River Basin Authority for abatement of pollution of river Ganga with World Bank assistance at an estimated cost of Rs.7000 crore. The World Bank will provide financial assistance of US \$ 1 billion. The principal objective of the project is to fund creation of pollution abatement infrastructure for conservation and restoration of water quality of the river<sup>69</sup>.

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<sup>67</sup> .Id.

<sup>68</sup> . <http://www.gits4u.com/water/water24.htm> Dated 29th April, 2012.

<sup>69</sup> .Id.

Details of funds released state-wise under the National River Conservation Plan (till March, 2011) . (Rs. in crore)

S.No.	State	Funds Released
1	Andhra Pradesh	259.80
2	Bihar	92.07
3	Jharkhand	4.45
4	Gujarat	90.05
5	Goa	9.26
6	Karnataka	47.83
7	Maharashtra	123.72
8	Madhya Pradesh	79.00
9	Orissa	56.41
10	Punjab	228.80
11	Rajasthan	21.12
12	Tamilnadu	623.65
13	Delhi	417.07
14	Haryana	231.61
15	Uttar Pradesh	1107.82
16	Uttarakhand	81.20
17	West Bengal	656.22
18	Kerala	2.78
19	Sikkim	59.46
20	Nagaland	4.50
Total		4196.82

This information was given by the Minister of State for Environment and Forests (Independent Charge) Shrimati Jayanthi Natarajan in a written reply to a question by ShriMeghraj Jain and Shri Raghunandan Sharma in Rajya Sabha on September 6, 2011.<sup>70</sup> Therefore, lot of money is incurred on River Cleaning

<sup>70</sup> .Id.

Programmes in India, which is necessary, because “Right to Clean Water is a Fundamental Right” in India<sup>71</sup>. But, it is submitted that this money can be saved by people’s awareness regarding their environmental duties.

### **Conclusion**

It is clear from the aforementioned analysis that our religious and social practices, though unintentionally, are also contributing in pollution, of water of rivers. It seems that there is no end to the misery of rivers. Therefore, it may be concluded with this remark that river pollution generally originates from industrial effluents, agricultural run-off and domestic sewage, which is resulting in environmental-economic loss to the country. Rapid industrialization and urbanization, accompanied by rural exodus to urban areas have had their evil consequences,<sup>72</sup> generally on environment, and particularly on rivers. The law dealing with the task of prevention and control of river pollution, is need to be set in motion along with public awareness about the importance of pollution free rivers, so that the rivers can be saved from the curse of pollution, and the precious money of the Government exchequer can be saved from expenditure on the river cleaning programmes.

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<sup>71</sup> .See Subhash Kumar v. State of Bihar, AIR 1991 SC 420.

<sup>72</sup> . P. Leelakrishnan, “Environmental Law In India”, Butterworth India, New Delhi (2000), p.90.