



HUMAN RIGHTS ASPECT OF CLEAN ENVIRONMENT: A STUDY OF WATER
POLLUTION IN THE STATE OF INDIAN PUNJAB

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ABSTRACT

The Indian states in pursuance of their commercial development and profit have failed to internalise the environmental and social costs of their pursuits and in so failing, have neglected to take measures to preserve or reproduce the very preconditions of capitalist production. The result (among others): pollution and waste. The paper is divided into four parts. The first part comprises of the linkage between environmental protection and human right. Whether human right to clean environment actually exists? The researchers have tried to approach this question in two ways. The second part of the paper elaborates upon Indian environmental jurisprudence. India not only enacted various specific laws to control environmental pollution but has incorporated significant provisions for the protection of the environment into its Constitution. Indian environmental law has taken its teeth from various decisions of the Supreme Court and High Courts of India. The third part of the paper elaborates upon the heinous crime of water pollution in the State of Indian Punjab. The studies and methodical investigations conducted on the waters of the Punjab which includes Kala Sanghian and Buddha Nala, both tributaries of the Sutlej River flowing in Punjab and the alarming rise in the cases of cancer deaths in Malwa Region of Punjab due to underground water pollution have been analysed. After the analyses of various studies, investigations and reports, the researchers have tried to conclude and make certain suggestions and recommendations, which constitute the last and fourth part of the paper.

Keywords: Pollution, Human Rights, Constitution, India.

1. INTRODUCTION

According to Ken Waro-Wiwa¹, “the environment is man’s first right”. For Earth itself to survive hospitable to life upon it – Human Rights to clean and healthy environment must be re-imagined and reinvigorated. At least since Rachel Carson’s *Silent Spring*, we have known about humankind’s squandering of non-renewable resources, its wanton killing of precious life species and its overall contamination and degradation of a delicate ecosystem.

¹ A Nigerian author and environmental activist as quoted In: Aron Jacob Sachs Ed., *Eco-Justice: Linking Human Rights and the Environment*, Worldwatch Paper No. 127, Worldwatch Institute, Waldorf MD, 1995.

In the last decade or so, these defilements, increasingly multidimensional and ubiquitous have assumed a systematic dimension. The states in pursuance of their commercial development and profit have failed to internalise the environmental and social costs of their pursuits and in so failing, have neglected to take measures to preserve or reproduce the very preconditions of capitalist production. The result (among others): pollution and waste.² Human rights have become a major concern of modern society. It is not only recognised by the international bodies but has become part and parcel of national and local governments. The concept of human rights is not as recent as we often tend to think. Certain inalienable rights of the individuals have been recognised in all the societies for example equality before the law of the land though many of these rights however were never granted to few sections or groups of the society. The 20th century witnessed grave human rights violations.³ The importance of environmental protection cannot be undermined in any situation. As aptly said by Judge Weeremetry, “the protection of the environment isa vital part of contemporary human rights doctrine, for it is a *sin qua non* for numerous human rights such as the right to health and the right to life itself. It is scarcely necessary to elaborate on this, as damage to the environment can impair and undermine all the human rights spoken in the universal declaration and other human rights instruments.”⁴

2. ENVIRONMENT PROTECTION AND HUMAN RIGHTS: A LINKAGE

The Question arises whether human rights to clean environment actually exist? There are two ways to approach this question. First whether international environmental law provides human rights norms? Second whether human rights law provides environment protection laws within it?

2.1 HUMAN RIGHTS NORMS IN ENVIRONMENTAL LAW

The main purpose of the international environmental law is to protect the environment *per se*. It imposes obligations on human beings and set standards for the protection of flora and fauna, the preservation of ecological balance and the conservation of the diversity of species. Though the beginning of international environmental law was made as early as in 1902⁵ but consciousness to develop a more effective and comprehensive regime only arose in the late 1960's⁶. The Antarctica Treaty (1959), the World Heritage Commission (1972), the Convention on International Trade in Endangered Species (1973) and the World Charter for Nature (1982) are some examples whereby the preservation of ecosystem earth was the major objective. These treaties do not exclusively exist for the benefit of the human beings, but should protect the environment from exploitation.⁷ The Stockholm Declaration 1972⁸, the very foundation of

² Burns H. Weston, David Bollier, “Regenerating the Human Right to a Clean and Healthy Environment in the Commons Renaissance”, 2011.

<http://www.commonslawproject.org/sites/default/files/Regenerating%20Essay,%20Part%20I.pdf>

³ R.P. Misra, “Ecological Balance as a Human Right”, In: R.B. Singh and Suresh Misra (Ed.), *Environmental Law in India: Issues and Responses*, Concept Publishing Company, New Delhi, 1996, pp. 20-26.

⁴ Judge Weeremetry in case concerning the Gabcikovo-nagymaros Project, [1997] I.C.J. Rep. 7, 91-92.

⁵ The Convention for the Protection of Birds Useful to Agriculture signed in Paris on 19th March 1902.

⁶ A.C. Kiss and D. Shelton, *International Environmental Law*, Graham and Trotman, London, 1991.

⁷ A.E. Boyle, “The Role of International Human Rights Law in the Protection of the Environment”, In: A. E. Boyle and M. R. Anderson (Ed.), *Human Rights Approaches to Environmental Protection*, Oxford University Press, Oxford, 1996, pp.43-70.

⁸ United Nations Conference on the Human Environment met at Stockholm from 5th till 16th June 1972 and considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

modern international law failed to proclaim an explicit human rights to the environment but this document shows the concern of the international community for environmental matters⁹. Though there is no explicit mention of human rights to environment in Stockholm Declaration but two principles namely Principle 1¹⁰ and Principle 7¹¹, had the quality of a Human Right. Later, Rio Declaration on Environment and Development (Rio Declaration) 1992 used the word 'Human Right' only 3 times. As per *Diane Shelton*, there is no explicit link between human and environmental rights¹². Then in 1989, a sub-commission of the United Nations Commission on Human Rights under the leadership of Mrs. Fatima Zohra Ksentini was assigned to study the possibility for the human rights to a safe environment. In 1994, the Krestini Report concluded that environmental rights are a part of the existing human rights. In Particular Principle 1 says that the human rights and the environment are indivisible. *Boyle* summarizes that from now on there is a "Shift from environmental law to the [human] right to a healthy and decent environment."¹³

2.2 ENVIRONMENTAL PROTECTION IN HUMAN RIGHTS LAW

Environmental rights do not fit neatly into any single category or "generation" of human rights. They can be viewed from at least three perspectives: First, from the angle of the existing civil and political rights. These are the rights that protect individuals from unlawful action of the Government. For example Right to Life and Right to Fair Trial. Now do these rights to life impose positive obligations on the State? Does the State have to provide adequate living conditions like better drinking water and air pollution controls so that this fundamental human right is not negatively affected? The United Nations Human Rights Committee answers this question affirmatively. Furthermore people have a right to a fair trial, in case the State acted harmful to the environment.¹⁴ A second possibility is to treat a decent, healthy or sound environment as an economic or social right¹⁵. The third option would treat environmental quality as a collective or solidarity right, giving communities rather than individuals a right to determine how their environment and natural resources should be protected and managed.¹⁶

Henceforth the international environmental laws have not been able to explicitly provide right to clean environment as a human right. Human rights law provides some legal

⁹ D. Shelton, "Environmental Rights", In Phillip Alston (Ed.), *People's Rights*, Oxford University Press, Oxford, 2001, pp. 187-194.

¹⁰ Principle 1 of the Stockholm Declaration provides "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated." As quoted In Louis B. Sohn, "The Stockholm Declaration on the Human Environment", http://www.unlibrary-nairobi.org/PDFs/Stock_decla.pdf

¹¹ Principle 7 of the Stockholm Declaration provides "States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea." As quoted In Louis B. Sohn, "The Stockholm Declaration on the Human Environment", http://www.unlibrary-nairobi.org/PDFs/Stock_decla.pdf

¹² D. Shelton, "Environmental Rights", In Phillip Alston (Ed.), *People's Rights*, Oxford University Press, Oxford, 2001, p. 187-194.

¹³ Subin Nijhawan, "A Human Right to Clean Environment?", M.A. Thesis, Centre for International Studies and Diplomacy, London, 2004.

¹⁴ Subin Nijhawan, "A Human Right to Clean Environment?", M.A. Thesis, Centre for International Studies and Diplomacy, London, 2004.

¹⁵ Dimensions have specifically been emphasized by the United Nations General Assembly, 'recognising that all individuals are entitled to have an environment adequate for their health and well-being'.

¹⁶ Awasthi & Kataria, "Law Relating to Protection of Human Rights", Orient Publishing Company, New Delhi, 2005.

bases which could be reinterpreted in favour of the environment. The best way to examine whether this has taken place is to study legal opinions, especially court verdicts. However, court verdicts in the international institutions dealing with environmental issues are rather rare. But “arguments for the protection of the environment as a substantive human right are almost certainly better addressed not in global terms, but in the context of particular societies and of their own legal systems”, because most of the human rights cases take place in domestic jurisdictions. They were rather created from lawyers and activists from other available resources.¹⁷ Therefore in the preceding part of the paper the development of environmental jurisprudence in India is discussed.

3. ENVIRONMENTAL JURISPRUDENCE: INDIAN CONTEXT

The development of environmental jurisprudence in India may appear, at first sight, similar to what we see in other common law countries. Yet, a close analysis reveals that India has been developing a form of environmental jurisprudence which is significantly different from other common law systems. In fact, Indian environmental jurisprudence brings out the unique characteristic of the new legal order which has been gradually established in India during the late 1970s and throughout the 1980s and early 1990s. India not only enacted various specific laws to control environmental pollution but has incorporated significant provisions for the protection of the environment into its Constitution. Within the last two decades, the development of environmental jurisprudence in India, following these constitutional law changes, has been remarkable in the sense that it has led to the virtual creation of a fundamental right to a clean environment in Indian laws. This forms a part of the public law regime established by the Constitution and appears to be based not only on modern concepts of fundamental human rights but also on indigenous notions of social justice constituting a unique human rights approach adopted through affirmative actions¹⁸.

3.1 CONSTITUTIONAL COMMITMENT: POLLUTION-FREE ENVIRONMENT

The Constitution of India mandates that though the provisions contained in Part IV i.e. Directive Principles of State Policy are not enforceable by any Court but the principles therein laid down are nevertheless fundamental in the governance of the country and it shall be the duty of the state to apply these principles in making laws.¹⁹ The Constitution further embodies that ‘The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.’²⁰ Here, the duty is cast upon the State to protect and improve the environment. Further Article 51A (g) of the Indian Constitution imposes fundamental duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures. Human rights protect individuals against the arbitrary action of the state; however, according to Article 51A (g), of the Constitution of India the protection of the environment is a fundamental duty not only of the State, but also of every citizen. The 7th Schedule appended to the Constitution of India provides Three Lists. Item 6 of List II, the State Governments have the responsibility to legislate on Public Health and Sanitation. Item 56 of List I provides that the Parliament i.e. Union had the power to legislate on interstate rivers. Entry 17 of List II provides thus: water, that is to say,

¹⁷ Subin Nijhawan, “A Human Right to Clean Environment?”, M.A. Thesis, Centre for International Studies and Diplomacy, London, 2004.

¹⁸ C.M. Abraham, “Environmental Jurisprudence in India”, Kluwer Law International, The Hague, 1999.

¹⁹ Article 37 of the Constitution of India.

²⁰ Article 48 A of the Constitution of India introduced by the 42nd Amendment Act, 1976.

water supplies, irrigation and canals, drainage and embankments, water storage and water power are subject to the provisions of Entry 56 of List I. None of the entries obviously claim any relation with prevention of water pollution. "Maintaining Purity or Wholesomeness of Water" obviously is not inclusive in Entry no. 56. For the purpose as enumerated 'water' being the subject on List II, the Parliament, could resort to any of the extra-ordinary powers as enumerated to adopt appropriate legislation.²¹ Therefore, as per the powers conferred upon the Parliament and the State Legislators, various environment protection laws have been legislated. *Prof. P.M. Bakshi* in his work has highlighted that as per Tewari Committee in this country, there are nearly 500 environmental law²² including 17 State Laws to control the crime of pollution and nature's destruction to prevent water pollution.²³

3.2 CRIMINAL ASPECT OF ENVIRONMENT POLLUTION

Upendra Baxi in his work states that in Bentham's classification of offences, environmental pollution crime can be placed in the 4th category, i.e. public offences which produce some common danger to all the members of non-assignable, individuals but the peculiarity in these crimes is that it does not appear that anyone is more likely to suffer than any other. So in these crimes there is less alarm in the society. Among the existing codified crimes, when measured in the Barometer of public opinion, in murder, dacoits, robbery, burglary, kidnapping, abduction and arson etc public reaction is more and more widespread as the crime affects a person or group directly in the body. Mind, reputation or property but more heinous crimes like atmospheric pollution, assaults on the environment and the destruction of nature etc though are dangerous crimes against humanity, are unable to produce more alarm of crime in society. This is so because pollution or nature destruction crime's effect is neither visible on the face of the crime nor felt immediately though it's dangerous cancerous effects gradually lead to a disaster.

Considering the nature of the offence committed while destructing the nature and the environment, therefore all the violations of environmental protection laws are crimes and its violators are criminals in the eye of law. Many environmental crimes are committed not only by the state, but by private actors. The Constitutional right to environmental in India could therefore also be indirectly claimed against private. In other words, the State has to prevent the private persons from damaging the environment, because the rights of another could be affected. Even if no direct damage has been caused by any act still the court can give orders in favor of the protection of environment rights.

The most characteristic feature of Indian Environmental law is the important role played by Public Interest Litigation, which has significantly shaped the law relating to environmental damage. Public interest litigation in India is purely a matter of constitutional law in which the writ jurisdiction of the Supreme Court or any of the provincial High Courts is invoked; normally to enforce the fundamental rights guaranteed in Part III of the 1950 Constitution.²⁴ While Part III does not relate explicitly to environmental matters, the Supreme

²¹ Ashok A. Desai, "Environmental Jurisprudence", 2nd Edition, Modern Law House, Lucknow, 2002.

²² Air (Prevention and Control of Pollution) Act, 1981; The Wild Life (Protection) Act, 1972; The Forest (Conservation) Act, 1980; The Environment (Protection) Act, 1986; The Water (Prevention and Control of Pollution) Act, 1974 etc.

²³ P.M. Bakshi, "Public Interest Litigations", 2nd Edition, Ashoka Law House, New Delhi, 2004.

²⁴ Article 32 of the Constitution of India grants the Supreme Court powers to issue writs or orders to enforce the Fundamental Rights only, whereas Article 226 extends powers to the High Courts for the enforcement of any legal right under the writ jurisdiction.

Court has played a laudable role in interpreting the right to life enshrined in Article 21 to include a right to healthy and pollution free environment.²⁵

4. THE JUDICIAL ACTIVISM AND INTERPRETATION

In India, the jurisdiction of the Supreme Court has widened the scope of the Right to Life under Art. 21 and included the Right to a wholesome environment. One of the most explicit and most cited cases in this regard is *Subhash Kumar v. State of Bihar*²⁶. The Supreme Court ruled that 'Article 32 is designed for the enforcement of the Fundamental Rights of a citizen by the Apex Court', and the 'Right to live is Fundamental Right under Art 21 of the Constitution and it includes the right to enjoyment of pollution free water and air for full enjoyment of life'. The Court even went that far in saying that a petition for Art.21 in connection with Art.32 can be invoked by 'social workers or journalists. In other words, any third person, doubtful that the environmental conditions at any place are sufficient to live a life in dignity, can call upon the Courts. This decision of the Supreme Court is revolutionary, because it sets a precedent. In case there is an allegation that natural resources are polluted, the High Court or Supreme Court can be induced to investigate and eventually issue a writ petition. The authorities and private persons will have to act in compliance with minimum environmental standards. Interesting to note is that the Supreme Court uses international 'soft law', in order to emphasize its decision. Hence, international environmental law, albeit vague, has an influence on the interpretation of rights through the Indian Courts. The Supreme Court has decided similarly in other cases related to the right to life. "If anyone intentionally spoils the water of another ... let him not only pays damages, but purifies the stream or cistern which contains the water..."²⁷

The Courts have taken advantage of the open-textured wording of Articles 32 and 226 of the Constitution. These articles give freedom to the courts to mold the remedies and even invent new remedies for the enforcement of the rights. Traditionally, the writ jurisdiction was supposed to be an exercise only for stopping or preventing a mischief, not for providing relief for the mischief already done.²⁸ The Supreme Court felt that merely stopping a mischief was not deterrent enough so it started awarding token compensation to the aggrieved person. It felt that the power of the Court was not only injunctive in ambit but was also remedial. The power to grant such remedial relief included the power to award compensation in appropriate cases. If the court did not have such power, the violator of fundamental rights would be quick in violating them and the Court would watch it helplessly. The first such case was of *Rudal Shah*²⁹. The Principle of the State's liability to pay compensation for the infringement of fundamental rights was stated most unequivocally by *Chief Justice Bhagwati* in *M.C. Mehta case*³⁰. This case extended the liability to pay compensation not only in respect of infringement

²⁵ Michael R. Anderson & Anees Ahmed, "Assessing Environmental Damage Under Indian Law", In Soli J. Sorabjee (Ed.), *Law & Justice: An Anthropology*, Universal Law Publishing Co. Pvt. Ltd., Delhi, 2004, pp. 343-354.

²⁶ (1991) 1 SCC 598

²⁷ B. Jowett, "The Dialogues of Plato: The Laws", Clarendon Press, Oxford, 1953, section 485(e).

²⁸ S.P. Sathe, "Judicial Activism in India : Transgressing Borders and Enforcing Limits", Oxford University Press, New Delhi, 2002.

²⁹ *Rudal Shah v. State of Bihar*, AIR 1983 SC 1086: In this case Rudal Shah had been arrested on the charge of murder in 1953 and was acquitted in 1968. He however, continued to languish in prison until 1982. The jail authorities said that he had been insane but could not show on what basis he had been adjudged as insane and what measure had been taken to cure him. It was obviously a case of illegal imprisonment due to sheer carelessness and callousness. The court not only set him free but also asked the State to pay him Rs. 30,000 as compensation.

³⁰ *M.C. Mehta v. Union of India*, AIR 1987 SC 1086: In this case the Legal Aid and Advisory Board and the Bar Association had filed a petition for closure of certain units of a company on the ground of

of first generation human rights as was done in *Rudal Shah* but in respect of third generation human rights, which are group rights. This was a case of environmental pollution which jeopardized the right of a large number of people.³¹

5. WATER POLLUTION: THE PUNJAB CASE

Water, first appeared on the globe before any living organism. Like air, water is the strength of life for every living organism. Next to air, water is an important ingredient of the environment. Seventy percent surface of the globe is covered by water. Next to the sea, rivers, streams and lakes are the containers of water, besides this, below the surface, are mighty deposits of water. Among inland water, river has a unique place. In ancient times, cities and civilizations had been mostly built up and developed on the banks of rivers or in river valleys.³² “Water is the most important element of nature. River valleys are cradles of civilizations”.³³

According to *Manusmriti*, “Water is ‘jeevan’ means life and it condemns throwing urine, night soil and dirty substances, blood or poisonous substance in water”. In a way it dictates maintaining purity of water, which is strength of life of all that is on the Earth. In modern times, the river is held to be a life-line.³⁴

According to Paras Diwan, India has traditionally been a pollution loving nation. “We pollute our rivers by disposing our dead bodies and all other human and other waste”.³⁵ After Second World War, there has been a rapid growth in industrialization and urbanization. Due to increase in discharge of industrial refuse and effluents as also urban sewerage, rivers became carriers of contaminated water, such waters reduced agricultural fertility. Coupled with the rural unhygienic conditions, it promoted spreading of waterborne diseases, viz. Cholera, Jaundice, typhoid, dysentery, and other diseases in those areas. Death due to drowning could not in these days be a certainty, but the survivor had to suffer the infections of polluted water. Realizing the menace of water pollution and growing public awareness of the precarious conditions, the legislature started its endeavours³⁶. As per WHO report every year unsafe water couple with lack of basic sanitation conditions kills at least 1.6 million children under the age of five years.³⁷ For example in Asia, one in 3 people does not have access to safe drinking water and one in 2 has no access to hygienic sanitations.³⁸ Every year, more people die from the consequences of unsafe water than from all forms of violence, including war.³⁹

Punjab which is one of the richest states in India and a state that ushered in the Green Revolution and has been nourishing most parts of the country is now battling acute water pollution, particularly attributed to chemical toxicity. As per Mr. Balbir Singh Seechewal, noted environmentalist and member Punjab Pollution Control Board many harmful chemicals such as

possible health hazards. The court had allowed the company to continue to function subject to certain conditions. While the petition was pending, there was leakage of oleum gas. The petitioners therefore asked for compensation to the affected persons. The Court granted compensation.

³¹ S.P. Sathe, “Judicial Activism in India : Transgressing Borders and Enforcing Limits”, Oxford University Press, New Delhi, 2002.

³² Ashok A. Desai, “Environmental Jurisprudence”, 2nd Edition, Modern Law House, Lucknow, 2002.

³³ *M.C. Mehta v. Union of India*, AIR 1988 SC 1037.

³⁴ *id* at pp. 95-96.

³⁵ Chaturvedi, “Laws on Protection of environment and prevention of Pollution”, as quoted In: Ashok A. Desai, “Environmental Jurisprudence”, 2nd Edition, Modern Law House, Lucknow, 2002.

³⁶ Ashok A. Desai, “Environmental Jurisprudence”, 2nd Edition, Modern Law House, Lucknow, 2002.

³⁷ World Health Organisation and UNICEF, “Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade”, WHO Press, Geneva, 2006.

³⁸ Punjab Pollution Control Board, 2004-2005 Annual Report of Punjab Pollution Control Board, Government of Punjab, Patiala.

³⁹ As quoted in Comptroller and Auditor General of India, “Performance Audit of Water Pollution in India”, Report No. 21 of 2011-12, Ministry of Environment and Forest, Government of India, New Delhi.

cyanide are flowing into the rivers.⁴⁰ Shocking levels of Uranium, arsenic, Chromium, nickel and iron and Pesticides content and other persistent organic pollutants have been found in the waters of the rivers of Punjab leading to neurotoxicity, immunotoxicity, congenital malformations, reproductive disorders, testicular cancers, foetotoxicity etc⁴¹. The researchers have tried to review the various research projects and studies conducted in the field of water pollution in the State of Punjab.

Various studies had been conducted on the Buddha Nala and reports presented by Kala Sanghian from time to time. All these studies have tried to highlight the pollution being caused by the wastes into these waters. However, certain steps have been taken to eliminate the problem but nothing concrete has come out. The streams get polluted day by day whereby increasing the problem of pollution in the State of Punjab. The review of some of the studies has been briefly discussed below.

The industrial and organic pollution of major rivers like the Sutlej and Beas in Punjab has continued without impediments for years bringing death and disease not only to Punjab's southern districts but also to Rajasthan, into which the waters of the two rivers have streamed via the 2000 kms Indira Gandhi canal. Kala Sanghian, a highly polluted Sutlej tributary conducts the waste from Jalandhar leather tanneries and surgical instruments industry and its untreated sewage to the Sutlej. As per S. Balbir Singh Seechewal, an Environmentalist and member of the Punjab Pollution Control Board, "Neither the industrialist nor the municipal corporations bother too much about the notices sent by the Punjab Pollution Control Board".⁴²

A recent report by the Punjab Pollution Control Board has categorised the water of Kala Sanghian drain and Buddha Nala under 'D' category. Villagers straddle the drain that carries 12.9 crore litres of untreated effluents from Industry and Municipal Corporation at any given time. The drain water, which finally flows into the Sutlej River, is used for drinking purposes in the Malwa Belt of the State and Rajasthan. People living in the 80 and more villages along the banks of the drain, which courses Doaba and Malwa region and part of Rajasthan, have suffered increasing incidence of respiratory diseases, skin, kidney, hair disorder and cancer over 15 years.⁴³

Surface Water Monitoring carried out under MINARS Scheme of Central Pollution Board in the year 2004-05 under which 313 samples were collected from 37 points fixed on river Sutlej, Beas, Ravi and Ghaggar and the analysis report sent to the Central Pollution Control Board. The quality of water of River Sutlej at the upstream of Nangal conforms to Class 'B' of Water Quality Index (fit for drinking without conventional treatment but after disinfection). The water quality is Class 'D' (not fit for drinking with even conventional treatment or for bathing but suitable for propagation of wildlife) and sometimes Class E (fit only for irrigation, industrial cooling, controlled waste disposal) at the confluence point of river Sutlej with Buddha Nala which carries the industrial effluents and the sewage of Ludhiana City.⁴⁴ Another study by Mr. Gill (1974)⁴⁵ investigated the physico-chemical characteristics of the waters of Buddha Nala in relation to their effect on fisheries. It was reported that there was

⁴⁰ Law is Greek, "Water Pollution Levels Turning Deadly in Punjab", 2010.

<http://www.lawisgreek.com/water-pollution-levels-turning-deadly-in-punjab>

⁴¹ AP Pollution Control Board, "Environmental Health Crises in Cotton Belt of Punjab", 2008-2009 Report of AP Pollution Control Board, Government of Andhra Pradesh, Hyderabad.

⁴² Outlook India.com, "In the Deep End", (June 27, 2011).

<http://www.outlookindia.com/printarticle.aspx?277235>

⁴³ Punjab Newslines, "Kala Sanghian Buddha Nallah in Punjab rated 'Class D' Seechewal threaten Protest", 2012. <http://punjabnewslines.com/~punjabne/content/kala-sanghian-drain-buddha-nallah-punjab-rated-%E2%80%98class-d%E2%80%99-seechewal-threaten-protest/21600>

⁴⁴ Punjab Pollution Control Board, 2004-2005 Annual Report of Punjab Pollution Control Board, Government of Punjab, Patiala.

⁴⁵ *ibid.*

no dissolved oxygen in polluted zone. It was reported to have adverse effects on fish life. Nitrates and phosphorus were also much more than their respective permissible limits. The study reveals that discharge of raw sewage into Buddha Nala had considerably increased.

Azad⁴⁶ studied the metal ion concentration in Buddha Nala water and found the concentration of lead, cadmium, Nickel and cobalt in Nala's water to be much more than their respective permissible limits. A study was conducted by Singh⁴⁷ on Buddha Nala. He carried out a study to demarcate the zone of ground water pollution along the Buddha Nala. He collected samples from Buddha Nala, tube-wells and hand-pumps and tested them for different physical, chemical and microbiological parameters. The study concluded that the water of hand pumps in the adjoining area of Buddha Nala was having higher MPN, ammoniacal nitrogen, total solids and total hardness than maximum acceptable limits of potable water. Thus, the ground water in nearby areas is totally unfit for drinking. The quality of water in Buddha Nala had also been declared unfit for irrigation by the researcher Mr. Hira, in 1989.⁴⁸ G. Singh, Civil Engineering Department conducted a detailed study of Buddha Nala⁴⁹. It was analyzed that dyeing industries were the main source of pollution of Buddha Nala. An empirical research conducted on Buddha Nala by the researchers in 2011⁵⁰ highlighted Majority of the population either living near the Buddha Nala or working in the industry situated near it are inflicted by various diseases. Some common diseases such cold, cough, fever were found among 40%-50% of respondents, whereas critical diseases like skin problems, visual and respiratory disorders. After the analysis, it was found that the Dyeing Industry on Tajpur Road is the main polluter of Buddha Nala.

There are hundreds of dyeing industries on both the banks of the drain and they throw the untreated waste into the Nala without treatment causing pollution at a large scale. Another major cause of the pollution of the Buddha Nala is sewage from the houses which comes mainly from the houses rather than industry and contributes a lot to the pollution. The liquid

⁴⁶ *ibid.*

⁴⁷ J.P. Singh, 1988: The study was aimed to predict the spread of pollutant into areas around Buddha Nala through ground water. The site selected for experimental work was in downstream of Buddha Nala near Haibowal colony. GAIA, "Ludhiana: The industrial vis-à-vis pollution capital",

<http://ess.co.at/GAIA/CASES/IND/LUD/LUDpollution.html>

⁴⁸ GAIA, "Ludhiana: The industrial vis-à-vis pollution capital",

<http://ess.co.at/GAIA/CASES/IND/LUD/LUDpollution.html>

⁴⁹ Eight sampling sites were selected along the 25km Stretch of Buddha Nala. The first three sampling sites were within city limits, fourth to seventh sampling sites were at downstream of Buddha Nala whereas eighth was selected at river Sutlej, one kilometre downstream from the point where Buddha Nala merges into the river. All sewage drains join to Buddha Nala before site four. Therefore, the four stations (fourth to seventh) were used for analysing the data and to understand the changes in water quality. The eighth sampling site was also not a true representative of Buddha Nala water as the Sutlej water mixed up in it. The data on this site was to determine the effect of Buddha Nala water on the Sutlej River. The samples were collected as per 'Standard methods for the Examination of Water and Waste Water' during the three season's city witnesses. One month interval was taken to collect the waste water samples. These samples were collected each time in the morning from 8.00 A.M. to 11.00 A.M. as it was expected to have a peak flow in the stream during this time. The collected samples were analysed for physico-chemical parameters: turbidity, pH, dissolved oxygen, BOD and ammoniacal-N within 6 hours of the collection. GAIA, Ludhiana: The industrial vis-à-vis pollution capital",

<http://ess.co.at/GAIA/CASES/IND/LUD/LUDpollution.html>

⁵⁰ The researchers studied the impact of pollution on the health of people residing in the neighboring areas of Buddha Nala and the source of its pollution. The research undertook, covered total number of 40 respondents from two classes namely General Public and Industry comprising of 20 respondents each. Among the general public, the respondents were mainly shopkeepers and local residents and among the industrial class, almost all the respondents were laborers working in the Industries. Out of the total respondents covered under the research, majority were illiterates. The area of study covers approximately all the areas situated on the banks of Buddha Nala i.e. Haibowal, Chandan Nagar (Chotti Pulli & Waddi Pulli), Peeru Mohalla, Tibba Road, Bihari Colony, Geeta Colony, areas near Central Jail & Tajpur Road of Ludhiana District of Punjab.

waste is not the sole pollutant. Pollution is also caused by the solid waste especially in residential areas around Buddha Nala which chokes the drain and becomes the major cause of floods during the monsoon season. There a number of dairies in Geeta Nagar at Tajpur Road which throw the whole of their solid and liquid waste into the Buddha Nala and it add to the pollution of the drain. Industry is the major cause of pollution of Buddha Nala but, it is not the SOLE cause as there are various other causes such as domestic waste, waste from religious institutions, and waste of dairies from Geeta Nagar etc. As an impact of various investigations and studies conducted on Buddha Nala, a proposal for 'In Situ Bio-Remediation Project'⁵¹ was approved by the Ministry of Environment and Forests.

6. CANCER DEATHS IN MALWA REGION OF PUNJAB

Various studies have been undertaken in the Malwa Region⁵² of Punjab on the rising cases of Cancer deaths. News reports about cancer deaths first emerged in late 1990's when the media reported high cancer mortality in a few select villages. Village Gyana and Jajjal in Bathinda district hogged the limelight for being "cancer stricken" Villages. The Government was initially in a denial mode and even stated that "there have been no cancer deaths in Punjab" in response to a parliamentary question.⁵³ First all India reports in 2001-2002, reported a spurt in cancer deaths in Punjab with incidences in Muktsar district growing from 30 cases in 2001 to 191 in 2002 while 19 to 144 in Faridkot during the same period.⁵⁴

The first study was conducted by Kheti Virasat and Green Peace in the year 2002-2003⁵⁵ in Rampura Block of Bathinda District. This study showed that acute health problems like cancer, reproductive health disorder, congenital abnormalities, physical and mental illness was prevalent in these areas. Cancer cases were reported from Lambi, Giddarbaha, Malout and Abohar. The study further indicated that pesticide exposure in children is adversely affecting their growth. Comparative study with Anandpur Sahib Children showed that pesticides impair the development abilities of children.⁵⁶ It was noteworthy that Kheti Virasat was the first to indicate the higher rate of cancer, infertility and several other health problems in some villages of Bathinda. This was reported in the media. Punjab Government took cognizance of this and ordered an inquiry. Then Punjab Pollution Control Board commissioned a study to the PGIMR Chandigarh, which had submitted its final report in February 2005. This report is a clear warning to people of Punjab that they set on a time bomb of environmental health hazards.

An epidemiological study conducted by PGIMER under the sponsorship of the Punjab Pollution Control Board reported in (2005)⁵⁷ that use of pesticides was responsible for the high

⁵¹ In Situ Bio-Remediation Project: This revolutionary method employs the use of microbes to eat away the waste component of effluents that are discharged into the water. The project will tackle the effluent load of industrial and domestic waste being emptied out into Buddha Nala. In effect, the microbial consortia applied in the technology will 'chew away' the organic load and industrial pollutants leaving behind the clean water.

⁵² Malwa Region comprises of major chunk of Punjab which includes eleven districts : Firozpur, Faridkot, Moga, Muktsar, Bathinda, Sangrur, Mansa, Ludhiana, Patiala, Fatehgarh Sahib and Ropar .

⁵³ Bajinder Pal Singh, "Cancer Deaths in Agricultural Heartland: A Study in Malwa Region of Indian Punjab", M.Sc. Thesis, International Institute for Geo- information Science and Earth Observation, Enschede, The Netherlands, 2008.

⁵⁴ Atlas of Cancer in India, A Project of The National Cancer Registry Programme, Indian Council of Medical Research, Supported by WHO, http://www.ncrpindia.org/NCRP_Login.aspx.

⁵⁵ Kheti virasat along with greenpeace conducted a study in 18 villages of six states of India chosen for their high levels of pesticide consumption on the mental health development of children. In Punjab three villages of Bathinda i.e. Bangi Nihal Singh, Jajjal and Mahi Nagal were the areas of study.

⁵⁶ AP Pollution Control Board, "Environmental Health Crises in Cotton Belt of Punjab", 2008-2009 Report of AP Pollution Control Board, Government of Andhra Pradesh, Hyderabad.

⁵⁷ A house to house survey conducted in Talwandi Sabo Block of Bathinda and comparative analysis was made with Chamkaur Sahib Block of Roop Nagar to identify the existing number of cancer cases and

prevalence of cancer in the Cotton Belt of Punjab. The study found both tap and ground water laced with carcinogenic chemicals. Tap water contains high content of arsenic, chromium, iron and Hg. Whereas, ground water also replete with arsenic, chromium, nickel and iron. Even these deadly pesticides have seeped into locally-grown vegetables as well. Water samples were tested and traces of DDT and BHC in canal – based water supply was found but such were not found in underground water in Talwandi Sabo. The report submitted that Traces of Persistent Organic Pollutants were found at large in Punjab in contaminated ground water which leads to neurotoxicity, immunotoxicity, reproductive disorders, testicular cancer, congenital malformations and foetotoxicity. The report concluded that cancer deaths in Talwandi Sabo Block greater than those in Chamkaur Sahib, “probably due to more use of pesticides, tobacco and alcohol”.⁵⁸ Mathur and others conducted a study for the Centre for Science and Environment, New Delhi in 2005⁵⁹. The report stated that not many studies have been carried out to confirm that pesticides are responsible for various incidences of cancer and other diseases in Punjab but the research worldwide has shown that long term exposure to pesticides do have impacts on health like cancer, DNA abnormalities, Parkinson’s disease, Neurotoxic, (Toxicity of the Brain or nervous system), Fetotoxic (Toxicity of the fetus), Teratogenic (Birth defects) etc. The blood tests conducted showed each person is exposed to and carries a body burden of multiple pesticides which might be due to combination of direct and indirect exposure to these pesticides.⁶⁰

Bajinder Pal Singh in the year 2008⁶¹ investigated the incidence of cancer mortality in the villages of Malwa Region in Indian Punjab for a five year period from 2002-2006. In his study he reported that cancer mortality tends to increase with increase in pesticide residues both in water and soil. The correlation with pesticide residues in water is slightly stronger than that with soil. Pesticide residues in water arise from two sources i.e. leaching into ground water as well as canals. The source of drinking water in the study villages varies between tube wells and canal water. In case of tube wells water is rarely treated before use and is often consumed directly after drawing it from well. Canal water is treated in a plant in the village but in most cases an old antiquated elementary sand filtration based plant is the only installation in the village. Hence water is rarely treated from pesticide residues in the entire study area.⁶² J.S. Thakur and other conducted an epidemiological study of high cancer among rural agricultural

number of cancer deaths that occurred in last 10 years. Prevalence of confirmed cancer cases was 103 per lakh at Talwandi Sabo (107/85315) and 71 per lak at Chamkaur Sahib (71/97928). Cancer deaths were 52 per lakh per year in Talwandi Sabo and 30 per lakh per year in Chankaur Sahib.

⁵⁸ AP Pollution Control Board, “Environmental Health Crises in Cotton Belt of Punjab”, 2008-2009 Report of AP Pollution Control Board, Government of Andhra Pradesh, Hyderabad.

⁵⁹ H.B. Mathur, H.C. Agarwal, Sapna Johnson, Nirmali Sarkia investigators of Pollution Monitoring Laboratory of Centre for Science and Environment visited Punjab and randomly collected 20 blood samples from four different villages of Punjab – Mahi Nangal, Jaggal, Balloh of Bathinda District and Dher of Ropar District. Samples were analysed for 14 organochlorines and 14 organophosphorus pesticides. Total number of pesticides detected in blood samples from Punjab was 15 out of 28 pesticides analysed.

⁶⁰ H.B. Mathur, H.C. Agarwal, Sapna Johnson, Nirmali Sarkia, “Analysis of Pesticide Residues in Blood Samples from Villages of Punjab”, Centre of Science and Environment Report, Pollution Monitoring Laboratory, New Delhi, 2005.

⁶¹ Bajinder Pal Singh conducted a study of 8 districts of Malwa Region which included Sangrur, Barnala, Moga, Firozpur, Muktsar, Bathinda, Mansa and Faridkot (44% area of Punjab). 30 village from 8 districts were selected for study. 15 villages were from high risk category and 15 from low risk zone. Villages were selected on random sampling basis. Soil and water samples were taken from agricultural fields.

⁶² Bajinder Pal Singh, “Cancer Deaths in Agricultural Heartland: A Study in Malwa Region of Indian Punjab”, M.Sc. Thesis, International Institute for Geo- information Science and Earth Observation, Enschede, The Netherlands, 2008.

community of Punjab in the year 2008⁶³ and reported that water used for various purposes including drinking was highly polluted. The main source of drinking water was hand pump water, tap water and canal water. Pesticides were the main source of pollutants. Levels of As, Se, Hg in ground water at Talwandi Sabo more than the permissible level. As Seen above permissible levels in tap water in Talwandi Sabo. Pesticides were even present in vegetable samples (cauliflower, carrot) and fruits.⁶⁴ Hence, various studies reviewed above, show high pollution level in the waters of Punjab leading to various dangerous diseases like cancer. In spite of these studies, nothing concrete has been undertaken to curb this menace neither by the general public nor by the Government. The recent report of 2011-12 of the Comptroller and Auditor General of India⁶⁵ also highlights the apathetic attitude of the Central as well as State governments in checking the rising menace of water pollution which is having its toll not only on animal species but also on human beings.

7. CONCLUSION AND RECOMMENDATIONS

The policy implications of this study are far-reaching. The Government in the policy on water pollution need to specifically take into account prevention and control of water pollution

⁶³ J.S. Thakur and others studied Talwandi Sabo Block of District of Bathinda and made Comparative Analysis with Chamkaur Sahib of Ropar District of Punjab. 36 villages of Talwandi Sabo Block and 93 villages of Chamkaur Sahib Block were studied.

⁶⁴ J.S. Thakur, B.T. Rao, Arvind Rajwanshi, H.K. Parwana and Rajesh Kumar, 'Epidemiological Study of High Cancer among Rural Agricultural Community of Punjab in Northern India', *International Journal of Environmental Research and Public Health*, 2008, 5(5), pp.399-407.

⁶⁵ The Report provides : 1) Water Quality Review Committees (WQRC) have been set up in Assam, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Sikkim, Tripura, UP, West Bengal. But the Committee has met regularly only in Maharashtra and Himachal Pradesh. 2) Although the concerns related to water pollution have been adequately addressed in National Water Policy and National Environment policy in India, both at the Central and the State level, provisions for generation of resources for prevention of pollution, treatment of polluted water and ecological restoration of polluted water bodies are not adequate. 3) Water Quality Assessment Authority (WQAA) had only issued a Uniform Monitoring Protocol (UMP) in 2005 for uniform procedure for sampling, analysis, data storage and reporting amongst the agencies operating Water Quality monitoring networks in the country. Apart from this, it had not taken any action towards promoting recycling/re-use of sewage/trade effluents, drawing up action plans for quality improvements in water bodies, schemes for restriction of water abstraction, reviewing the status of national water resources, identifying hotspots etc. Since 2001 only seven meetings of Water Quality viruses), human produced chemicals and other toxins, introduced species and other biological disruptions etc., had not been done in respect of any river or lake in India by Ministry of Environment and Forests (MoEF), Central Pollution Control Board (CPCB) or by Ministry of Water Resources (MoWR). 5) Risks to human health from water-borne diseases and waterbased diseases as a result of pollution of rivers and lakes has not been assessed by MoEF/CPCB. With respect to assessment of risks to human health from pollution of ground water, MoEF/CPCB stated that it had not been done, while Central Ground Water Board (CGWB) stated that such risk assessment was outside its purview. 6) Risks to human health from arsenic, zinc, iron, mercury, copper, chromium, cadmium, lead, persistent organic pollutants like dioxins, furans and polychlorinated biphenyls as a result of pollution of ground water had been assessed by only two States: Assam and Karnataka. 7) Standards for agricultural practices and runoff pollutant levels for ground water had not been set by either MoEF or CGWB. No monitoring of pollution caused by agricultural practices and runoff pollutant levels were being done by MoEF/CPCB/CGWB.

Comptroller and Auditor General of India, "Performance Audit of Water Pollution in India", Report No. 21 of 2011-12, Ministry of Environment and Forest, Government of India, New Delhi.

as well as ecological restoration of degraded water bodies. It should initiate steps to consolidate all the multiple agencies involved in river and lake conservation, right from planning to implementation and monitoring. There is a need to consolidate all these functions under an umbrella agency for better coordination and accountability. One of the most reliable ways to control water pollution is stabilizing the Ecosystem. Various physical and biological methods can be adopted to restore species diversification and Eco-balance in the water body to prevent pollution. Some species of algae, such as *Chlorella*, *Scenedesmus* and *Spirulina* are excellent biological oxidants and are commonly found in polluted waters and stabilization pond effluents in India. These can be used to reduce pollution load in a water body.

The Government should be cast upon the duty to create awareness among the general public regarding the ill-effects of water pollution and changing their mindset. This is one of the major solutions which can ultimately lead to the lesser pollution. The absence of regulations limiting the use of pesticides and non awareness as to its ill effects has led the farmers to indiscriminate use of pesticides. The Government along with Agricultural Universities, Agricultural Scientists and Environmental Groups should start a mass awareness campaign amongst the farmers of the 'Best Pesticide Practices' and also regulate the pesticide use. There should be periodical monitoring of levels of heavy metals and pesticides in the drains, drinking water and even food and reports should be submitted to the health department for necessary action. The Government should provide safe and treated water for drinking purposes through taps in every household. The Government should install a large number of water treatment plants with latest technology as and where required and maintain such plants timely so for its efficient functioning. The Government should take steps to implement the environmental laws in their true sense by bringing to book those who pollute the waters by throwing wastes.

While India has the Water (Prevention and Control of Pollution) Act 1974 in place, the law does not address the issue of restoration of the polluted water bodies. The Water Act⁶⁶ provides very low punishment as low as imprisonment for a term not less than one year and six months but which may be extended to six years and with fine to the ones who knowingly pollute streams, well or sewer with poisonous, noxious matter. The enhanced penalty for the second time offence is just imprisonment not less than two years but which may extend to seven years and with fine.⁶⁷ Low financial or non-financial penalties to environmental offenders fail in enforcing the provisions of the Act strictly to secure prevention and control of water pollution. This has led to the situation where the cost of noncompliance became significantly lower than the cost of compliance with the provisions of rules and orders under the Acts.

There are certain lacunas in the Water Act 1974 which needs immediate attention. The Water Act provides that when it is apprehended by a Board that the water in any stream or well is likely to be polluted, the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class, for restraining the persons who is likely to cause such pollution from so causing.⁶⁸ The power to restrain any person is not

⁶⁶ Section 43 of the Water (Prevention and Control of Pollution) Act 1974.

⁶⁷ Section 45 of the Water (Prevention and Control of Pollution) Act 1974.

⁶⁸ Section 33 of the Water (Prevention and Control of Pollution) Act 1974 provides power of board to make application to courts for restraining apprehended pollution of water in streams or wells.

(1) Where it is apprehended by a Board that the water in any stream or well is likely to be polluted by reason of the disposal or likely disposal of any matter in such stream or well or in any sewer, or on any land, or otherwise, the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class, for restraining the persons who is likely to cause such pollution from so causing.

(2) On receipt of an application under sub-section (1) the court make such order as it deems fit.

(3) Where under sub-section (2) the court makes an order restraining any person from polluting the water in any stream or well, it may in that order-

with the Board. The Board has to make an application to the court which leads to long delays; therefore the very purpose of this enactment fails. Moreover, as per section 49(1) of the Water Act⁶⁹, no court can take cognizance of any offence under this Act unless the complainant gives notice of minimum 60 days of the alleged offence and of his intention to make the complaint. The requirement of 60 days notice to the State Board mitigates the stringent effect of the punitive provisions of the Water Act.

The Punjab Pollution Control Board must perform its duties effectively in order to, not only preserve the environment but also to make the Right to live in a Clean & Healthy Environment a living reality. The ground water should be managed by strict rules and regulations. The use of groundwater should be periodically tested in laboratories, so that the consumption is safe and not injurious to health. The rules made by the Central Pollution Control Board relating in this aspect should be strictly adhered. Till the underground water is not made safe for drinking, the government should make the general public aware not to use ground water through hand pumps and tube wells for drinking purposes. The Government has adopted a lackadaisical attitude towards cancer deaths caused due to pesticide intake while drinking ground water by the public of Malwa region. The Government should be made liable to compensate for the deaths as the citizens have the fundamental right to clean water and Government is duty bound to provide safe drinking water to the general public.

On the part of the industry, there should be proper checks on the disposal of pollutants by the Industries. The Industries should be made to adhere to the laws strictly. The Industries should be provided an alternative method of disposing Industrial waste. There is a lack of individual Treatment Plants in industries which is a basic requirement and must be in operation in all the industries. Proper and timely cleaning of the drains can help to a great extent, which is done rarely. It must be a frequent exercise. In the same perspective, non-governmental organizations have a major role to play in completing this uphill task. They should not only bring awareness among the general public regarding the protection of the environment from pollution but should keep on pricking the Government to undertake effective measures to control environmental pollution. Lastly, the Government and the General Public should join hands together to create the State of Punjab a safe haven by building a 'Pollution-free' State and protect the very basic human right of the people.

(i) direct the person who is likely to cause or has caused the pollution of the water in the stream or well, to desist from taking such action as is likely to cause pollution or, as the case may be, to remove such stream or well, such matter, and

(ii) authorise the Board, if the direction under clause (i) (being a direction for the removal of any matter from such stream or well) is not complied with by the person to whom such direction is issued, to undertake the removal and disposal of the matter in such manner as may be specified by the court.

(4) All expenses incurred by the Board in removing any matter in pursuance of the authorisation under clause (ii) of sub-section (3) or in the disposal of any such matter may be defrayed out of any money obtained by the Board from such disposal and any balance outstanding shall be recoverable from the person concerned as arrears of land revenue or of public demand.

⁶⁹ Section 49 of the Water (Prevention and Control of Pollution) Act 1974 provides cognizance of offences: No court shall take cognizance of any offence under this Act except on a complaint made by-- a Board or any officer authorised in this behalf by it; or any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Board or officer authorised as aforesaid, and no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try any offence punishable under this Act.