Journal of Advances and Scholarly Researches in Allied Education
Vol. 20, Issue No. 2, April-2023, ISSN 2230-7540

An Examination of India's Environmental Laws and the role of Industrial Pollution in our Culture

Renuka[1]*, Dr. Balasaheb Garje[2]

[1] Research Scholar, University of Technology, Jaipur

[2] Professor, Department of Law, University of Technology, Jaipur

Abstract - One of the most glaring environmental issues currently facing industrialized nations is industrial pollution, which also affects the majority of recently industrializing economies. The industrial structure of India has seen numerous changes, particularly after the economic reforms. However, no significant environmental reforms were launched in India to account for the effects of changing industrial patterns on the environment. Analysis of the environmental effects of India's industrial sector is so necessary. Since different sectors produce pollution at varying intensities, this work has first examined the make-up of the industrial structure. We calculated the changes in the pollution load of Indian companies using the Industrial Pollution Projection model developed by the World Bank for calculating pollution load in developing nations without access to continuous industrial pollution data. Finally, we suggest policy changes that are required to promote resource substitution away from finite resources, adoption of technology and practices that minimize environmental effect, and more efficient resource usage. Industrial pollution is seen as a significant contributor to environmental contamination. It degrades the environment and costs society significantly while also endangering the health and safety of people. The main polluting industries include petroleum, sugar, tanning, glass, cement, glass, and plastic. This important problem of industrial pollution receives little or no attention. Many industrial sectors do not employ a systematic method for the proper drainage and disposal of their hazardous effluent. Since the industrial sector is responsible for over 50% of the environmental contamination, it should be held accountable for its duties regarding proper waste effluent treatment.

Keywords - Industrial pollution, air, land, water, protection, industries, environment, Industrial sector.

----------X----------

1. INTRODUCTION

One of the main causes of air, water, and land pollution in India is industrial activity. The World Health Organization estimates that only 2% of all heart and lung ailments, 5% of all lung malignancies, and 1% of all chest infections worldwide are caused by outdoor air pollution. The recent changes to the Indian political structure favor industrial expansion, but at the same time, we must exercise greater caution when it comes to industrial risks. Even though the industrial sector was the scene of one of the worst industrial catastrophes ever in 1984 in Bhopal, little progress has been made. An estimated 8,000 individuals killed within the three days. Even after three decades, the impacts are still being felt by thousands of people. It is clear that industrial pollution has a negative effect, leading to the loss of rare genetic resources. There is a tremendous need to find a balance between industrial expansion and the physical environment in order to lessen the severity of pollution because many developing economies, like India, are in an evolutionary stage right now. This paper aims to explore the negative impacts of industrialization on environmental contamination.

The main contributors to global warming are pollution of the air, water, and land. First, the atmosphere gets polluted when dangerous greenhouse gases are released into the atmosphere. The process through which cities expand or societies become more urban is known as urbanization. It also occurs when a significant portion of the population from rural areas moves to urban areas in search of employment or educational opportunities. For starters, urbanization is the process by which civilizations become more urban or by which cities expand. As a result, there are more people and they have higher needs for everything. For instance, as the population grows in cities, there may be a corresponding increase in human activity and the number of vehicles on the roadways. Additionally, as societies advance, more people are using contemporary devices like technological machines. For instance, equipment like refrigerators, microwaves, air conditioners, and others increase the production of chemicals and greenhouse gases

that contribute to global warming. Additionally, more people are relocating to urban areas, forcing them to down trees in order to construct some shelters or houses for them.

Environmental pollution brought on by the industrial revolution is one of the biggest issues the world is currently dealing with, and people are becoming more and more aware of the importance of a clean environment for the wellbeing of all living things. Environmental pollution is a negative change to our environment, particularly as a result of the industrial revolution. Industrial initiatives have a significant impact on society and the environment in terms of both benefits and threats. Over the years, man has been making reparations for the damage he caused to the natural world and to natural processes. It is accurate to claim that the 19th century's industrial revolution played a major role in the development of environmental pollution. The increased environmental pollution brought on by many sectors poses a serious hazard to people, animals, and plants. Occupational pollution

Environmental quality has been impacted by anthropogenic activity and the development of new technology in many different ways. Man's ignorance is what causes the negative impacts on the natural environment and the health of living things. Due to improper monitoring and management of industrial waste disposal into the environment, it becomes dangerous for living things. Industrial wastes are frequently not properly treated before being dumped into the air, water, or soil, which can have serious negative health effects and pose risks to any living things that may be present at the disposal site (World Bank, 1992). Different chemicals and advances in developmental technologies in industrialized sectors are now essential to the advancement of humanity. The management of various agricultural pests is a significant application of pesticides. The usage of these pesticides has a favorable impact on agricultural output, but hazardous chemicals also have a negative impact on the environment and human health. As a result, pollution of the water, air, and soil, which affects the growth of plants and other living things as well as human health, has emerged as a significant environmental problem, particularly in industrial areas (Ahmed-Fariz et al., 2009). The elements of the environment are land, water, air, plants, and animals. All of these elements interact with one another and keep nature in balance. This balance can occasionally become out of whack for a variety of causes, one of which is environmental pollution, primarily brought on by numerous businesses.

The Environment Protection Act of 1986 was passed by the Indian Parliament. The Environment Protection Act of 1986 was passed by the Indian government in accordance with Article 253 of the Constitution in the wake of the Bhopal Tragedy. It was passed in March 1986 and went into effect on November 19, 1986. There are 26 sections. The Act's goal is to carry out the decisions made by the United Nations Conference on Human Environments regarding the protection and enhancement of the human environment as well as the avoidance of risks to people, other living things, plants, and property. The Act is a "umbrella" piece of legislation created to give the federal government a framework for coordinating the operations of different federal and state agencies created by earlier laws, like the Water Act and the Air Act (Wikipedia, 2016). India is currently dealing with a worrying environmental crisis. India is the world's second-fastest rising producer of greenhouse gases (GHGs), coming in at number six overall. The top 10 most polluted cities in the world include three of India's largest cities. Environmental awareness is strong in India, according to the initiative GREEN - India (Growth with Resource Enhancement of Environment and Nature), over 12 years after the devastating Union Carbide Chemical leak in Bhopal and five years after the country's economic recovery (IEA, 2015).

The Tata Energy Research Institute recently published a report on the state of the natural resources in India and environmental pollution. According to the study, environmental deterioration is causing India to lose at least 10% of its natural income. According to the report's analysis, there was a two-thirds decrease in the supply of fresh water. Major water-using businesses including agro-based, refineries, petrochemicals, and fertilizers have seen a 40-fold increase in their water needs, yet they are still not treating the massive amounts of waste water they produce. An estimated 2.5 million Americans die prematurely each year as a result of indoor and outdoor air pollution. In the past 60 years, the total amount of sewage produced by urban centers has increased six times.

In order to better understand the Environment Protection Act and its characteristics, as well as how it has been implemented throughout the nation, a review paper has been written.

2. BRIEF REVIEW OF LITERATURE

In numerous studies where firm level data on environmental parameters are lacking, results from the IPPS database have been utilized. Input-output methodologies were used by Frickmann Young (2000) to calculate industrial emissions from export-oriented operations in Brazil between the years of 1985 and 1996. This was done in order to determine how the country's pollution level might change if the economy shifted towards exports. While CO2 emission data was acquired from the Brazilian Greenhouse Gases Inventory, water polluting parameters like BOD and heavy metals as well as air polluting parameters like particulate matter, SO2, NOx, and HC were measured using the Industrial Pollution Projection System. Both sets of data demonstrate the negative effects of export liberalization on the environment in developing nations like Brazil since export operations have been

found to be more pollutant-intensive than other economic activities.

In his study, Sunil K. Sinha attempts to quantify the level of industrial pollution in the post-reform era. He made use of the World Bank's industrial pollution forecast methodology. This method is intended for measuring industrial pollution load in developing nations without access to environmental data. In terms of output and value added, the proportion of highly polluting industries has increased since the reform. As a result, from 1990–1991 to 2005–2006, manufacturing industry pollution of the air, water, and land grew by a staggering 200 percent. This is because prior industrial plans did not take into account the growing issue of industrial pollution.

Rita Pandey (2005) used the Industrial Pollution Projection System of the World Bank and associated abatement cost coefficients to differentiate industries based on pollution level and its abatement costs in her study of 17 highly polluting or "red category" industries of India for the year 1994–1995 She believes that focusing on companies with high pollution levels but low costs of abatement is essential for an efficient pollution management plan. She also supports the employment of market-based instruments for effective pollution control mechanisms rather than command and control-style systems.

Lagos' 14 industries' industrial pollutant loads were compared by Oketola and Oladele in 2011. (Nigeria). Utilizing the Industrial Pollution Projection System and customarily studied effluent pollution loads, calculations were made for employment and overall output.

In order to determine whether there is a statistically significant difference between the pollution loads from conventional effluent analysis and the IPPS pollution loads with respect to employment and total output, the data was statistically validated using a t-test at a 95% confidence interval (2-tailed) and analysis of variance (ANOVA). With the exception of basic industrial gas manufacture, where the two means are significantly different, they discovered that there is no significant difference between the pollutant loads assessed with respect to the two variables in any industry. At this limit, IPPS pollution loads also outperformed pollution loads from traditional wastewater analysis. They believe that the IPPS technique offers a low-cost method for calculating pollution load in underdeveloped nations after seeing the results. In poor nations where there is insufficient budget for environmental protection, it will improve industrial pollution control. The overall industrial pollution would be greatly reduced if the interim measures were successful.

Most studies have focused on a small number of businesses and only employed one or two polluting mediums to quantify industrial pollution. In addition, they omitted the most recent data on the variables and did not compare industrial pollutants at various times. This study covers all the major industries at the two-digit level and sheds light on the situation of industrial pollution at various points in time, including recent data.

3. MATERIALS AND METHODS

The article's methodology for data collection and analysis is based on qualitative and descriptive research methods. The information gathered from secondary sources, such as published research papers, journals, and the internet, was used for research projects and the evaluation of published publications.

Manufacturing in Pakistan: The industrial sector in Pakistan is made up of small, medium, and large businesses using both modern and outdated technology. The majority of industries are found in urban areas, such as Karachi, Lahore, Faisalabad, and Multan. However, none of these cities, which are egregiously to blame for environmental degradation, have any treatment facilities. Pakistan's sub-industrial industries include the ones listed below:

1. Textile
2. Cement
3. Pharmaceutical
4. Leather
5. Coloring and filaments
6. Steelworks
7. Industry sectors
8. Oil
9. Paper
10. Dairy
11. Clothes

Location, technology, degree of operation, expansion, and sector change are some of the main elements cited as contributing to environmental pollution. The surgical, textile, carpet, sports, and leather industries account for 80% of export-oriented industries. Due to increased industrialization and urbanization, pollution is increasing. Large amounts of industrial waste have made their way straight into water bodies, causing contamination and having a negative impact on the nation's agricultural sector, which is a significant contributor to the GDP of the nation. Sulfur, nitrogen, and carbon oxides are constantly rising. Everything is the result of a flawed monitoring system.

Various industrially manufactured harmful substances are produced and released into the environment. The industrial sector generates 3700 tonnes of different chemicals, including cadmium, mercury, and other organic pollutants, in addition to 250 tonnes of carbon monoxide (CO), 162 tonnes of nitrogen oxides, 378 tonnes of sulphur oxides, and 162 tonnes of other chemicals. The law protecting

the environment in Pakistan and other organizations help to lower pollution levels there.

Industrial pollution has a negative social impact because it has transformed the economy and given the working class more opportunities to support them. A higher standard of life brought on by industrialization can be used to achieve economic and social equality. The workplace has an impact on how people behave9. Their sense of inclusion in the economy grows. It transformed the way they thought. Whereas growing the industrial sector increases employment and production in the nation, it also has a negative social and environmental impact.

Significant Industrial Pollutants: The industrial revolution began to take shape as a result of scientific and technological advances. But industrial pollution has also been produced by the industrial revolution. As industrial sectors develop, pollution becomes a problem that must be urgently handled as it continues to rise. Environmental abiotic and biotic components are both impacted by industrial pollution. Both elements work together to maintain equilibrium in the ecosystem, which is lost as a result of pollution. Businesses pollute the environment for a variety of causes, including the combustion of fossil fuels like coal, oil, and natural gas, as well as the usage of chemicals in the tanning and dyeing industries.

Environment-Related Harm: Because of Industries The majority of Pakistani enterprises, which are concentrated in its largest cities, regularly contaminate the country's oceans, rivers, and streams without disposing of their trash. It is either directly injected into these bodies or it builds up on landfills. Heavy metals, fertilizers, cement, sugar, paper pulp, textiles, and toxic industrial effluents that are improperly disposed of cause ecological imbalances and early human mortality worldwide

Industry's Contribution to Air Pollution: Sulfur dioxide (SO2), nitrogen dioxides (NO2), ozone (O3), carbon monoxide (CO), and hydrogen sulphide (H2S) are among the gaseous contaminants. Large enterprises including the cement industry, power plants, manufacturing, smelters, and refineries are responsible for the release of these pollutants. These are the main environmental aggressors, and they contribute to a variety of human respiratory illnesses as well as eyesight impairment. The burning of fossil fuels and waste materials in industries exacerbates this major problem of air pollution because of urbanization, industrialization, and rising energy consumption. Many of the different nitrogen, sulphur, and carbon oxides that are present in the atmosphere are released by certain sources, such as cement, sugar, and power plants. These oxides form acidic rain when they combine with water, which is bad for the health of the land, water, people, animals, and plants. These air pollutants can harm plants directly or indirectly, or they can lead to acid rain, which erodes the crust of the planet. Acid rain is caused by a variety of airborne pollutants that descend on the ground and pollute the land and water.

Environmental Issues and Concerns on a Regional or Global Scale: Due to industrial pollution, numerous problems like ozone depletion, global warming, ocean and land pollution, depletion of natural resources, sea level rise, contaminated air, and pesticide-tainted food pose severe regional and international concerns. If people cooperate and acknowledge their obligations to society, they can fix these issues to some extent. It faces many difficulties, so there is a pressing need to work towards a cleaner and healthier environment. The globe has changed in the twenty-first century due to political change, an expanding economy, and scientific and technological advancements. There is a constant need for food, shelter, energy, and clothing due to overpopulation. This issue affects more than just one nation. They all have to work for it, and many people are held accountable for it.

Climate change is a word that encompasses a wider range of continuous, all-encompassing changes in the environment. We can claim that ozone depletion, global warming, and threats to biodiversity all fall under the general heading of "climate change." Pakistan is now experiencing numerous unusual climate variations. Each of these factors alone contributes to regional or global climatic changes.

Impact of Industrial Operations on the Environment: Due to diverse industrial operations, the three natural environmental components air, land, and water are all significantly impacted. The biotic (people, animals, plants, and microorganisms) and a biotic (air, water, land, and soil) elements of the environment are negatively impacted. Industrial effluents that are not treated seriously harm the ecosystem. Due to rising pollution, residential areas in large centers are also negatively impacted. Society and the economy must bear high costs as a result of industrial operations' negative effects3. It is clear from numerous publications that a significant amount of environmental damage is caused by industrial effluents. Government support for infrastructure development and growth in Pakistan's industrial sectors is nonexistent. These businesses use household sewage systems to discharge hazardous effluents, and they are located within residential cities. Cloth weaving and processing, clothing, iron foundries, glass, plastic, metallurgical goods, cement, and paper pulp are among the significant industrial sectors2. These are all municipal issues that seriously damage cities.

4. RESULTS AND DISCUSSION

Controlled Practices Recommendations: Industrial pollution requires a great deal of care both the largest consumer and the largest polluter of natural resources are in the industrial sector. Therefore, the government and the industrial sector have obligations to develop emergency plans for environmental problems. In this regard, it is

important to work together to protect the environment and natural resources.

Small industrial sector training: Formal training and management of the small and medium industrial sectors receive zero attention in Pakistan. For cleaner, pollution-free production and environmental pollution control programmer, it is necessary to design such training policies.

Building Local Domains: Another crucial element that might aid in pollution management is building local administration. Decentralization of power at the local level can aid in the development of environmental performance. The local government can establish performance standards to reduce industrial pollution. By carefully enforcing SEPA laws for every sector in Pakistan to ensure controlled gas and wastewater emissions one of the tools for the controlled environment is controlling NEQS (National Environmental Quality Standards) limits.

Out of 200 respondents, 8% were students, 10% were housewives, 68% belonged to the Service Class, and 14% were from the Business Class. In contrast, half of the students strongly disagreed with the statement that the country has more rules than it does procedural implementation of the Environmental Protection Act (EPA). 60% of the housewives agreed with the statement, whereas 40% were unaware of the laws or how the Environment Protection Act was implemented in procedural terms. More laws and less application of the procedural aspects of the Environment Protection Act are highly agreed upon by 44.1% of respondents from the service class, compared to 32% who agree, 3% who disagree, and 21% who are unaware of the EPA.

Table 1: Cross-tabulation of EPA Implementation and Occupation

Occupation	There are more laws and less implementation of procedural aspect of Environment Protection Act (EPA) in the country				Total
	Strongly Agree	Agree	Undecided	Disagree	
Student	9	9	0	0	**18**
Housewife	0	15	9	0	**24**
Service	50	28	47	5	**130**
Business	9	20	5	0	**34**
s					
Total	**68**	**72**	**61**	**5**	**206**

Table 2: Cross-tabulation of EPA Implementation and Industry Type

Nature of Industry	There are more laws and less implementation of procedural aspect of Environment Protection Act (EPA) in the country				Total
	Strongly Agree	Agree	Undecided	Disagree	
Factory	35	55	13	5	**108**
Judiciary/ Legal department	0	9	0	0	**9**
Academic	0	7	0	0	**7**
Department engaged in Policy	0	7	0	0	**7**
Total	**35**	**78**	**13**	**5**	**131**

Out of all respondents, 42% work in factories, 12% work in academia, 4% each work in judicial/legal departments and policy-making departments, 14% work for NGOs, and the other 32% work in other categories of industries. 29% of industrial workers strongly believe that there are more laws and less procedural application of the Environment Protection Act (EPA) in the nation, compared to 52% who agree, 5% who disagree, and 14% who are unaware of the issue. The topic has been agreed upon by all respondents who work in the judicial and legal fields, policy formation, and academia. More laws and less execution of the procedural aspects of the Environment Protection Act are strongly supported by 86% of respondents from non-governmental organizations, while 14% are unsure of their position.

While 19% of respondents agreed and 38% of respondents had no understanding what the Environmental Protection Act (EPA) was or how it was implemented, 44% of respondents from other types of industries strongly agreed that there are more rules and less implementation of the procedural aspects of the EPA. Karl Pearson's coefficient of correlation, which indicates a positive association between the nature of an industry and its procedural characteristics, is 0.005, which supports this conclusion.

5. CONCLUSION

While all housewives concurred that they know nothing about the Environmental Protection Act (EPA), half of the students strongly agreed that there are more laws and less implementation of its procedural aspects in the country. Additionally, there have been found to be beneficial relationships between the EPA's procedural aspect and how it is implemented in terms of occupation, residential area, and industry type. It is important to plan an awareness campaign with the assistance of NGOs and other government organizations in order to increase public knowledge.

REFERENCES

1. Adebola Oketola and Oladele Osibanjo (2011): Assessment of Industrial Pollution Load in Lagos, Nigeria by Industrial Pollution Projection System (IPPS) versus Effluent Analysis, Environmental Management in Practice, Dr. Elzbieta Broniewicz (Ed.), ISBN: 978-953-307-358-3.
2. Frickmann Young, E. C. (2000): International trade and industrial emissions in Brazil: an input-output approach, XIII International Conference on Input-Output Techniques, Macerata, Italy
3. Government of India (2010): Annual Survey of Industries, CSO-Dept.of Statistics. MOSP: New Delhi
4. (2000-01): Annual Survey of Industries. MOSP: New Delhi
5. (2000-01): Annual Survey of Industries. MOSP: New Delhi
6. Gupta, Shreekant (2002): 'Environmental Benefits and Cost Savings Through Market-Based Instruments: An Application Using State-Level Data From India'. Working paper no. 02-005, Centre for Energy and Environment Policy Research.
7. Hettige, M. et al., (1994):'The Industrial Pollution Projection System', Policy Research Working Paper No.1431, Washington, DC: World Bank.
8. Mehta, S., Mundle, S., and U. Sankar (1994): Controlling Pollution: Incentives and Regulation, New Delhi: Sage Publications.
9. Pandey, Rita (2005): "Estimating Sectoral and Geographical Industrial Pollution Inventories in India: Implications for Using Effluent Charge Versus Regulation", Journal of Development Studies, Vol. 41, pp 33-61.
10. Rita Pandey (2005) - "Estimating Sectoral and Geographical Industrial Pollution Inventories in India: Implications for Using Effluent Charge Versus Regulation", The Journal of Development Studies, 41:1, 33-61.
11. Shanti Gamper-Rabindran & Shreyasi Jha (2004) - Environmental Impact of India's Trade Liberalization.
12. Sunil, K. Sinha – Industrial Structure and Industrial Pollution.

Corresponding Author

Renuka*

Research Scholar, University of Technology, Jaipur